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SUSTAINABLE WATER AND SANITATION IN AFRICA (SUWASA)

REFORM WORK PLAN: LIBERIA - Supporting Economic
Regulation of Urban Water Services in Liberia

March 2013 (Revised April 2013)

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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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ACRONYMS

AfDB	African Development Bank
E3	USAID Bureau of Economic Growth, Education, and Environment
GoL	Government of Liberia
LMWP	USAID Liberia Municipal Water Project
LWSC	Liberia Water and Sewerage Corporation
M&E	Monitoring and Evaluation
ML&E	Ministry of Lands, Mines and Energy
MPW	Ministry of Public Works
PMP	Performance Management Plan
PPP	Public Private Partnerships
RWP	Reform Work Plan
SIP	Small Investment Program (SUWASA)
SOW	Statement of Work
SUWASA	Sustainable Water and Sanitation in Africa
USAID	United States Agency for International Development
WASH	Water, Sanitation, and Hygiene
WSS	Water and Sanitation Services

PROJECT SUMMARY SHEET

Project Title	Supporting economic regulation of urban water services in Liberia
Country	Liberia
Specific Location	Nation-wide, based on pilots in the towns of Robertsport and Kakata.
Goal/Overall Objective	The overall goal of the SUWASA Liberia initiative is to support the country's WASH sector institutions meet a key sector objective—ensure sustainability of water supply access through promotion of cost recovery in the urban water sector.
Tasks	<ol style="list-style-type: none"> 1. Develop a methodology for calculating cost of water services as a basis for tariff decision making in LWSC outstations 2. Test the methodology in Robertsport and Kakata 3. Prepare water tariff guidance for LWSC outstations 4. Support expansion of kiosk service in Robertsport
Project Duration	12 months
Approximate Commencement Date	April 15, 2013
Prime Implementing Organization	SUWASA, partly through subcontracts/individual consultants.
Implementing Partners	USAID Liberia, LMWP Project, LWSC, MPW, AfDB, UNDP GOAL WASH

1.0 CONTEXT OF THE PROJECT

Liberia lost most of its workforce and public services infrastructure during a devastating 15-year civil war that ended in 2003. Ranking near the bottom of the Human Development Index, the country is in the midst of rebuilding itself. The country has a population of slightly over 3.5 million, of which approximately 1.7 million live in urban areas¹.

Liberia is in transition from the civil war to its goal of becoming a middle level income country by 2030. Peaceful elections in 2005 and the inauguration of Africa's first female head of state in 2006 ushered in a peaceful period of hope and high expectations for Liberia's recovery. The water sector is one of the country's many sectors receiving attention.

1.1 OVERVIEW OF THE SECTOR

1.1.1 Urban Water Sector Policies

Several key policies and strategies have been produced over the last few years to guide the transition regarding water supply and sanitation services. Specifically:

A) Water Supply and Sanitation Policy, Nov 2009 ("The WASH Policy")

This Policy lays out proposed future institutional arrangements and the following key policy principles related to urban services:

- Basic services for all
- Adoption of pro-poor approaches
- Sustainability through full cost recovery
- Development of the private sector in service provision
- Community well-being through social and environmental considerations



B) Liberia WASH Compact

Sanitation and Water for All: A Global Framework. May 2011 – "The WASH Compact" – This Compact sets out four commitments and related cross cutting issues together with measures and activities for each theme plus indicators, allocation of responsibilities and target dates. The four Commitments are:

- Establish and strengthen institutional capacity
- Ensure equity and prioritized service provision
- Develop a monitoring system
- Improve sector financing mechanisms

¹ Government of the Republic of Liberia, 2008 National Population and Housing Census, Preliminary Results

C) Water, Sanitation and Hygiene Sector Strategic Plan 2012-2017, April 2012 (“The WASH Strategic Plan”) - This substantial document:

- Assesses coverage definitions and calculated number of people to be served to achieve the MDGs by 2017.
- Proposes strategies and discusses issues with a number of sector Policy Statements. Urban policy statements include the following strategies:
 1. Basic services for all
 - All urban water and sanitation systems will be rehabilitated to their pre-war condition by commencing a national water supply rehabilitation project
 - Service providers will deliver at least 25 l/c/d of safe water of WHO Guidelines for drinking water quality or Liberian drinking water standards as and when they are framed.
 - The quality of water supplied from all water systems in Liberia shall be monitored on a regular basis in accordance with procedures established by a regulatory board (the Water Supply and Sanitation Commission, which is yet to be established).
 - The sewerage systems in urban centres will be restored as quickly as possible and thereafter expanded gradually.
 - Various options of safe low cost household and communal excreta disposal will be studied, and low cost replicable systems will be promoted.
 - Solid waste disposal will be managed by all municipal authorities in accordance with national Solid Waste Management policies, strategies and regulations
 2. Adoption of pro-poor approaches
 - Water supply to the poor shall be guaranteed through special arrangements especially when designing tariff policies and infrastructure investments.
 - Lifeline (social) tariffs should be adopted to ensure that every person has at least a basic level of service. The tariff shall cover only the operation and maintenance costs. It is neither possible nor wise to set up a minimum tariff at national level which would be equivalent to setting up a uniform tariff rate. Such rates need to be set at local or regional level with full participation of interested parties. Consideration will be made to the possibility of cross-subsidies between richer and poorer.
 3. Sustainability through full cost recovery
 - In setting tariffs the political pricing of water should be avoided.
 - Consumers should pay all costs required to achieve long-term sustainability.
 - Government should gradually disengage from funding the operation and maintenance of systems to enable it to concentrate on Water and Sanitation Supply (WSS) capital development projects.
 - Water distribution systems will be rehabilitated (including leak detection and repairs), house connections will be restored, and billing, commercial

activities and customer management will be improved to ensure financial viability of services delivered, but this will be carefully managed to ensure that it does not interrupt the supply of affordable water to those who cannot afford household connections.

- Staff will be trained in water production, distribution (leak detection and repairs), metering consumers, computerized billing system, and commercial activities and general management.
- Water and sanitation service providers will use benchmarking indicators of the International Benchmarking Network for Water and Sanitation Utilities (IBNET) for effective monitoring and evaluation of WSS services.
- Regulation and encouragement of secondary suppliers (eg. kiosks, street vendors) to areas where the piped network cannot reach to be investigated, with the possibility that piped water rates will subsidise the salary cost of these alternatives.

4. Development of the private sector in service provision.

- Privatization of services shall be encouraged through appropriate regulatory reforms that will separate service provision, policy and regulation and encourage private investment.
- Different types of private sector involvement, including Public-Private Partnerships (PPPs), will be considered to allow each actor to leverage their skills, abilities or mandates, if they can be developed to better tackle the challenges of providing water and sanitation services to the poor and accelerate the rate of expansion of served areas, improving financial viability and affordability and designing services to meet the specific needs of poor customers. Such arrangements require close cooperation between regulators, municipalities, private sector providers, poor communities and the NGOs that work with them.
- PPPs or other private sector involvement will be considered for revenue collection, metering, and WSS services. A contractual and regulatory framework will be developed accordingly to ensure private sector participation.
- Where the interest of the poor are at stake, Government shall step in with subsidies for service provision, or regulations requiring cross-subsidising tariff structures implemented. Many of the problems should be addressed at the beginning of the process of private sector participation through the careful planning of arrangement, the careful design of supporting policies (for example, subsidies to support low-income households), and ensuring that legitimate concerns are heard and responded to by involving affected stakeholders such as consumers, employees, unions, management, and other government agencies.

5. Community well-being through social and environmental considerations

- Each project proponent should assess the environmental and social impacts on the wellbeing of the community and the environment. Environmental impact measures must be included in project evaluation criteria. This will enable the proponent to design and implement appropriate mitigation measures and environmental management plans.
 - Effective environmental conservation and hygiene promotion programs for consumers, educational institutions and other internal and external stakeholders will be developed and implemented. Women and children will be centre stage in promoting better sanitation and hygiene practices.
- Discusses institutional arrangements and financing.
 - Provides a Sector Operations Matrix with a hierarchy of: Strategic Objectives; issues; activities; results; time frame; lead ministry/agency; other ministries/agencies. (SOM)
 - Provides a Sector Activity Plan (SAP) - time schedule bar chart. (SAP)
 - Provides Sector Investment Costing (SIC)

1.1.2 Institutional Arrangements

The Ministry of Lands, Mines and Energy (MLME) is responsible for water supply and sanitation policy development and for monitoring policy implementation. The Ministry is also charged with defining the legislative and regulatory framework for urban water services in Liberia. The decision-making structures for the WASH sector are defined in the WASH Policy and the WASH Strategic Plan with mandates given to a 'National Water Resources and Sanitation Board' (NWRSB) and the 'National Water, Sanitation and Hygiene Promotion Committee' (NWSHPC) to ensure coordination and coherent decision making amongst the various agencies involved in the sector. The NWSHPC has been established and currently meets monthly; the NWRSB is not yet appointed.

A "Water Supply and Sanitation Commission" (WSSC) is designated as the sector's regulatory body and is proposed to regulate tariffs, licenses, Public-Private-Partnerships (PPPs), Service Standards, Water Laws compliance etc. The WSSC has not yet been established but over the next year a UNDP GOAL WASH project is working toward that goal. The Executive Order for WSSC has been drafted and is waiting Presidential signing. Sector

stakeholders are advocating for the issuance of the executive order to at least temporarily (an executive order can only stand for 12 months) establish the WSSC while necessary parliamentary action is taken to form a longer-term legal basis for the WSSC.

Throughout all sector policy and planning documents, the 'Liberia Water and Sewerage Corporation' (LWSC) retains its established responsibility for the water and piped sewerage service provision in urban areas. However, some uncertainty remains regarding the role of LWSC as Liberia pursues an emerging policy of decentralization.

Extract of Section 1 and 2 of LWSC Act:

1. To engage in the management, development, construction, installation, manufacture, operation, transmission, distribution, sale, and supply to all areas of water and sewage services and of equipment and facilities relating thereto.
2. To establish and maintain water and sewer facilities, offices and/ or agencies within and everywhere inside Liberia; and to exercise any or all of its corporate powers and rights in Liberia and in any foreign country or countries, if need be.
3. To determine fair and reasonable rates, fees, and charges which shall be charged in connection with the provision of water and sewage services

1.1.3 Emerging Decentralization Policies

The 2010 Decentralization Policy specifies new roles for County Governments in water, sanitation, hygiene and solid waste². The policy gives County Legislative Assemblies the broad role of enacting rules and regulations for delivery of basic public goods and services including health, sanitation and public works and establishing related administrative agencies.

Extract of Section 3.3 of Decentralization Policy:

3.3.5. Enactment of local ordinances, rules and regulations to promote the peace, maintain public order and provide for the delivery of basic public goods and services, including but not limited to health, sanitation, public works, education, human services, gender equality, economic and business development, sports, culture, tourism, park and creation, and others; and 3.3.6. Establish such administrative agencies (beyond the national mandated agencies) as the counties may deem appropriate for their good governance and development.

This new policy leaves some uncertainty regarding the mandate of LWSC as the 1978 law establishing LWSC does not specifically demarcate LWSC services areas. While, the WSSP and the WASH Strategy implies that LWSC is responsible for water and sewerage services in the greater Monrovia area and the 24 urban centers, i.e., all county capitals and towns with over 5,000 persons, these policies also implies that the future form of LWSC operations should follow the spirit of the Decentralization Policy

According to the Liberia Governance Commission, decentralization is envisaged to be implemented gradually over a 10-year period starting with the

de-concentration of certain national ministries followed by a gradual shift towards full decentralization with all service sectors falling under the County Governments.

From Section 2.1.2 of Water Supply and Sanitation Policy:

Liberia Water and Sewer Corporation is already in existence, and is expected to undergo structural changes after the proposed Corporatization Study. The structural changes should allow for independent urban authorities in county capitals.

1.1.4 Existing Urban Water Services

Currently, there are three active service areas in Liberia, in Monrovia and three small outstation operations in Kakata, Zwedru and Robertsport (recently revived with USAID assistance). However, access is highly restricted in all service areas. In Monrovia, only about 8,000 connections are in the utility customer database and only 4.5MGD is being produced in the main treatment plant, out of the plants 12MGD capacity. Commercial vendors and shallow groundwater remain the primary sources of urban water supply. An African Development Bank project is funding service improvements, including attempts to revive full treatment plant production in Monrovia and service expansion in Kakata, Zwedru and Buchanan, but progress has been slow. USAID is designing service improvements in three additional county capitals (Robertsport, Voinjama, and Sannequelle) but the extent of the service improvements that will be funded is still uncertain because of budget uncertainties.



² Liberia National Policy on Decentralization and Local Governance, January 2010

1.2 CURRENT SECTOR CHALLENGES TO BE ADDRESSED IN THIS RWP

This RWP will focus on the challenge of establishing and adjusting tariffs in Liberia's urban areas. Currently, it appears that the only documents which form the basis for LWSC tariff determinations are the following:

- Water Supply and Sewerage Tariff for Monrovia – Customer Regulations – Second Edition, January 2003; and
- New Water and Sewerage Tariff for Monrovia, June 19, 2008.

Though GoL policy is to promote sustainability of water services through full cost recovery, there is no process to link the current subsidy being provided to LWSC with their tariff levels and operational efforts to ensure that their costs of operation are covered to the greatest extent possible with revenue from these tariffs, while balancing this objective with meeting other mandates such as ensuring affordability, quality and equity of water services. Liberia has no agreed methodology for determining an optimal cost structure for providing service taking into account operational inefficiencies such as non-revenue water and low revenue collection. Without such a methodology it is difficult to determine how much it actually costs to produce and supply a cubic meter of water and, furthermore, what LWSC should equitably charge as a tariff for the water service. An optimum tariff setting process should help point toward cost minimization steps and guide management to improve efficiencies. Tariff setting guidelines do not currently reflect transparent principles of recoverable costs, time horizons for reaching cost recovery and incentive systems for utility performance.

No sector stakeholders are highly conversant with tariff adjustment procedures, especially the need for provision of accurate and well-presented information for tariff analysis to be undertaken. Liberia needs a tariff model that can easily be understood by sector stakeholders and where all critical factors are appropriately applied, e.g., assumptions to be used in the tariff application including general country economic and other financial factors, operation and maintenance costs, cost of servicing informal settlements, etc.

2.0 PROJECT DESCRIPTION

2.1 GOAL/OVERALL OBJECTIVES

The overall goal of the SUWASA Liberia initiative is to support the country's WASH sector institutions meet a key sector objective—ensure sustainability of water supply access through promotion of cost recovery in the urban water sector. This will be accomplished through development of a methodology for calculating and using cost of water services as a basis for tariff decision making; testing of the methodology in two LWSC outstations – one with a new system coming online (Robertsport) and one with a history of operations (Kakata); and preparing water tariff guidance based on the results of the pilots in Robertsport and Kakata providing a transparent, fair and technically defensible process for establishing and adjusting water tariffs. A complementary activity will expand sustainable service delivery in Robertsport via construction of a small expansion to its nascent infrastructure and application of the proposed tariff setting methodology.

2.2 TASKS

The project will be carried out in accordance with the tasks described below. Section 3 provides a detailed description of these tasks.

2.2.1 Task 1: Inception Period

An inception report will be developed for this project and include a detailed schedule of activities with sub-activities to complete the project tasks on the cost of service calculation methodology, testing in Robertsport and Kakata, and development of tariff guidelines. The inception period will establish important collaborative relationships between the project team, and project partners, including UNDP GOAL WASH, USAID/Liberia, LWSC, USAID/LMWP, and other sector stakeholders. Meetings will be held with these key stakeholders and a detailed review of available data will be carried out. The inception report will be provided within 45 days of project start-up and will include: key findings and recommendations on project implementation including an updated work plan with detailed sub-tasks and schedules. The inception reports will also include a monitoring and evaluation plan.

2.2.2 Task 2: Develop a Methodology for Calculating and Using Cost of Water Services as a Basis for tariff decision making in LWSC outstations

Under this task, SUWASA will support sector stakeholders in calculating the cost of water services and applying the calculation results appropriately in tariff setting and adjustment decisions for LWSC's outstations.

2.2.3 Task 3: Test the Methodology in Robertsport and Kakata

SUWASA will apply the methodology developed in task two to two LWSC outstations, one with a new system coming online (Robertsport) and one with an active system and operational history (Kakata).

2.2.4 Task 4: Prepare Tariff Guidance for LWSC Outstations

Based on results of application of the methodology in Robertsport and Kakata, SUWASA will prepare guidelines providing recommended procedures for appropriately considering cost of service in developing tariffs and reviewing proposed tariff adjustments for LWSC's outstations. The guidelines will provide complete instructions for using the methodology and recommendations for addressing the current lack of transparency and effective incentives for performance improvement in Liberia's current process of tariff setting.

2.2.5 Task 5: Support Expansion of Kiosk Service in Robertsport

SUWASA will fund the construction of small infrastructure improvements to allow service expansion in Robertsport in time to inaugurate during celebrations of Independence Day there on 26 July 2013. Completion of these improvements will both provide improved access to drinking water in Robertsport, but also provide an important opportunity to advocate for the principles of public engagement on tariff setting that will ensure sustainable access to these improvements. As such, this activity will lend critical support to the objectives of USAID's Liberia Municipal Water Project efforts to expand such sustainable access improvements in their three target cities. SUWASA's proposed SIP is provided in the Annex.

3.0 PROJECT ACTIVITIES

3.1 INCEPTION PERIOD

As stated above, the Inception Period will include development of a detailed schedule of activities with sub-activities for all three tasks. SUWASA will work in close coordination and cooperation with LMWP and will make full use of the data and analyses prepared by LMWP

3.2 DEVELOP A METHODOLOGY FOR CALCULATING AND USING COST OF WATER SERVICES AS A BASIS FOR TARIFF DECISION MAKING IN LWSC OUTSTATIONS

Under this task, the project will develop and test a cost of service calculation methodology using data from existing outstation operations in Robertsport and Kakata that would provide revenues and incentives to move these operations in the direction of functioning as commercially viable utilities that are able to meet the water and sanitation demand reliably and reasonably within their service areas.

The following activities will be carried out under this task:

1. Review current cost categories:
 - Data gathering – The SUWASA team will gather cost data for Robertsport and Kakata. The amount of data collected will likely be based on availability but, is expected to include cost data for Robertsport developed by LMWP and, for Kakata, data submitted in conjunction with tariff adjustments, most recent historical data, and the current cost budget and year-to-date actuals.
 - Compile and compare current cost categories – The team will evaluate the cost data for consistency among cost categories. The existing cost categories will be evaluated for completeness and ability to successfully track costs in the current regulatory environment.
2. Develop Uniform Cost Categories for future use:
 - Identify cost category structure – Along with stakeholder input, the team will develop a set of cost categories that will provide a level of detail to allow for successful and accurate tracking of costs.
 - Provide definitions for each account - Specific definitions for each cost category will be provided to make it easy to allocate costs to each specific account.
3. Estimate current and historical costs in each proposed cost category – The team will work with LWSC and LMWP to allocate current budgetary and cost data into the proposed cost categories. In addition, the historical cost data received will also be incorporated to the greatest extent possible to allow for a trending analysis across the new cost categories.
4. Cost analysis utilizing the proposed cost categories – The team will perform an analysis on the historical and current costs for each of the cost categories. Such an analysis is expected to include, a review of cost trends over time, identification of normalized data that can be used as a time-based benchmark to evaluate performance and comparison of cost categories..
5. Conduct an assessment of the appropriateness of current tariffs in Kakata and Robertsport (for Robertsport, this would include the current tariff in effect for the limited system and the pricing that is used by water vendors, based on data and analysis provided by LMWP.

3.3 TEST THE METHODOLOGY IN ROBERTSPORT AND KAKATA

Using the alternative tariff structures and cost recovery levels, the team will develop tariff rates to achieve recovery projected cost service costs for Robertsport and Kakata. The team will present the results to key stakeholders at a workshop in Monrovia, and solicit their comments and concerns.

3.4 DEVELOP TARIFF GUIDELINES FOR LWSC OUTSTATIONS

Through this activity, SUWASA seeks to support the Government of Liberia in establishing improved procedures for establishing and adjusting tariffs in LWSC's outstations. While specific contents of the guidelines will be prepared and documented in the inception report, it is expected that the guidelines will include, at a minimum:

- Complete documentation and users guide for the cost of service- methodology and tariff model;
- Recommended procedures for including all stakeholders in tariff deliberations; and
- An explanation of the tariff setting process, for use by the WSSC in explaining the process to a wide range of stakeholders.

3.5 SUPPORT EXPANSION OF KIOSK SERVICE IN ROBERTSPORT

Through its Small Investment Program SUWASA will fund the construction of small infrastructure improvements to allow service expansion in Robertsport in time to inaugurate during celebrations of Independence Day on 26 July 2013. Completion of these improvements will both provide improved access to drinking water in Robertsport, but also provide an important opportunity to advocate for the principles of public engagement on tariff setting that will ensure sustainable access to these improvements. As such, this activity will lend critical support to the objectives of USAID's Liberia Municipal Water Project efforts to expand such sustainable access improvements in their three target cities.

LMWP will provide final designs for the infrastructure improvements, implement tendering, provide construction oversight, and manage handover to LWSC and the local Robertsport Steering Committee supported by LWMP. Since this will be financed through the SUWASA SIP SUWASA will work closely with LWMP including supervision of the construction. SUWASA's proposed SIP is provided in the Annex.

4.0 EXPECTED RESULTS

- Financial and operational efficiency of urban water services improved based on tariffs reflecting operational costs and incentives to reduce inefficiencies.
- Tariff decision making procedures that are transparent to all stakeholders and based on consideration of cost recovery, efficiency, equity, and affordability developed, approved and implemented.
- Governance and accountability of the urban water sector improved.

4.1 INDICATORS FOR MEASURING PERFORMANCE

During preparation of the Inception Report, SUWASA will work with USAID/Liberia and LMWP in finalizing indicators and targets for the project, to be included in the M&E plan as part of the report.

- Number of good practices identified, promoted and adopted.
- Number of new policies, laws, agreements, regulations or investment agreements implemented that promote access to improved water supply (USAID F-indicator).

Table 1: Results Framework

Goal: Support sustainable urban water service delivery in Liberia Indicators: <ul style="list-style-type: none"> • Number of people gaining access to an improved drinking water source (USAID F-indicator) • Number of people receiving improved service quality from existing improved drinking water sources (USAID F-indicator) 			
Objective	Activities	Expected Results	Indicators
1. Promote financial and operational efficiency in the provision of urban water services.	Propose cost of service-based methodology for tariff decisions for LWSC outstations Develop a revised tariff model for water services	Methodology that promotes cost recovery developed, approved and implemented	Number of good practices identified, promoted and adopted
2. Support the adoption of improved governance and accountability mechanisms for urban water services.	Recommended guidance for tariff setting in LWSC outstations for	Governance and accountability of the urban water sector improved	Number of new policies, laws, agreements regulations or investment agreements implemented that promote access to improved water supply and sanitation (USAID F-indicator) Number of good practices identified, promoted and adopted

5.0 ASSUMPTIONS AND RISKS

- Availability of financial data from LWSC - It is very important that financial information especially related to the costs of providing the water services is available.
- LWSC and other stakeholders understand the value of determining the optimum cost of water.
- Government and the LWSC support the exercise and willing to accept the recommendations especially with the possible recommendation of tariff increases or increases in government subsidies.

6.0 LINKAGE WITH OTHER SECTOR DEVELOPMENT ACTIVITIES

6.1 COMPLEMENTARITY WITH OTHER DEVELOPMENT PARTNERS

USAID through SUWASA will complement Africa Development Bank investments in the water sector and USAID Liberia's Municipal Water Program (LMWP) proposed investments in their three target county capitals. The SUWASA project in Liberia will help to ensure that U.S. Government investment in basic infrastructure will be embedded in a favorable and robust regulatory framework and that customers will be assured of a transparent, fair and technically sound tariff regime based on cost recovery principles as envisioned by the GoL

and outlined in the various sector policy documents.

The SUWASA team will work collaboratively with the LMWP office in Monrovia and the USAID Liberia Mission, using their combined resources and experience to sensitize stakeholders across the Liberian water sector and exchange technical information.

In addition to LWSC, SUWASA will coordinate closely with other government agencies and the UNDP GOAL WASH project supporting institutional sector reforms in addressing specific regulatory and institutional shortcomings in regulatory oversight and tariff setting as well as accountability measures.

At the time of preparation of this Reform Work Plan, SUWASA has not identified other development partners that would complement or potentially duplicate this SUWASA intervention; however, should additional partners be identified over the course of implementing the project, we will adjust the work plan as required. Throughout the life of the project, SUWASA will seek opportunities to leverage resources from these partners, e.g., in scheduling and convening workshops, exchanging technical information, etc.

6.2 INSTITUTIONAL ARRANGEMENTS

The project components can be implemented based on the use of short term technical assistance (STTA). It is not envisaged to have a standing SUWASA office in Liberia. However discussions will be held with LMWP (another Tetra Tech implemented project) in Monrovia for possible hosting of consultants when they are in country.

The project will be supervised from the SUWASA Africa Regional Office in Nairobi. SUWASA will work with LMWP and other sector stakeholders in defining the requirements for consultants including designing SOWs and procurement of the consultants. During the inception period, a decision will be made on the role of the SUWASA Regional Office for reporting results to our partners, overall in-country responsibility for project implementation and representation of the project at strategic meetings with initiative partners, managing the project budget, coordinating and managing consultancy contracts.

7.0 MONITORING, EVALUATION AND REPORTING ARRANGEMENTS

7.1 INTERNAL MONITORING AND QUALITY CONTROL

The SUWASA Chief of Party will assign one of SUWASA's technical team members to provide technical project oversight and ensure achievement of expected results. Additional support for M&E and documentation of the results will be provided by other SUWASA Nairobi office staff as required. The assigned technical team member will participate in an initial project start-up meeting with USAID/Liberia and LMWP staff. SUWASA staff will report to both USAID/E3 and USAID/Liberia on results of the project in Liberia. The timing of all deliverables and outputs will be specified in the Inception Report, which will include the PMP.

7.2 MONITORING AND EVALUATION PLAN

The SUWASA Monitoring and Evaluation Specialist will prepare a Monitoring and Evaluation (M&E) Plan as part of the Inception Report prepared under Task 1. The M&E Plan will specify expected SUWASA results-outputs and outcomes and impact; indicators for measuring results; proposed targets; and monitoring periods and documentation required for performance audits and evaluations.

7.3 ENVIRONMENTAL COMPLIANCE MONITORING

The majority of SUWASA support in Liberia will be technical assistance and capacity building and is “categorically excluded” from any environmental mitigation efforts under the SUWASA IEE. However the proposed kiosk service expansion in Robertsport will require implementation of an Environmental Management and Monitoring Plan (EMMP). SUWASA’s proposed EMMP is provided in Annex 2.

7.4 REPORTING ON PROJECT PROGRESS

The SUWASA office in Nairobi will provide the following reports:

- One inception report, including key findings and recommendations regarding initial investigations into each of the three initiative components, a summary of the results of any Stakeholder Action Planning/Inception Workshop, an updated Work Plan and PMP.
- Monthly and quarterly reports, including a narrative on the reporting period, discussing actual project progress vis-à-vis planned activities and agreed project schedules, project administration and management issues, challenges in project implementation, planned activities for the subsequent reporting period, and a financial resource utilization report;
- Final Report, including all activities performed, results achieved and resources used. The Final Report will also include a thorough analysis of established performance indicators.

8.0 RESOURCES

8.1 IMPLEMENTATION PLAN

Below is SUWASA’s proposed implementation plan for the Liberia project. The plan assumes USAID approval of the RWP and SIP by March 31, 2013. The schedule will be refined and expanded as required, based on the findings provided in the Inception Report.

Activity	2013										2014		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Task 1: Inception period													
1.1 Meeting with urban sector stakeholders to introduce the project													
1.2 Inception report													
Task 2: Develop a Methodology for Calculating and Using Cost of Water Services as a Basis for tariff decision making in LWSC outstations													
2.1 Analyze costs and develop cost categories for Robertsport and Kakata													
2.2 Develop draft cost of service calculation methodology based on Robertsport and Kakata analyses													

Activity	2013									2014		
	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
2.3 Workshop to present cost of service and tariff methodologies to Liberia stakeholders												
2.4 Finalize cost of service methodology based on workshop comments												

Task 3: Test the Methodology in Robertsport and Kakata

3.1 Assess current policy and procedures for setting and adjusting tariffs and identify strengths, weaknesses, and opportunities for improvement for Robertsport and Kakata												
3.2 Develop draft tariff model for Robertsport and Kakata												
3.3 Workshop to present cost of service and tariff methodologies to Liberia stakeholders												

Task 4: Prepare Tariff Guidance for LWSC Outstations

4.1 Finalize tariff model for Robertsport and Kakata based on workshop comments												
4.2 Prepare draft tariff guidance												
4.3 Stakeholder workshop to present draft guidance												
4.4 Finalize guidance based on workshop comments												

Task 5: Support expansion of kiosk service in Robertsport

5.1 Finalize design and tender documents (LMWP lead)												
5.2 Complete procurement of commodities and construction contractor												
5.3 Implement and complete construction												

8.2 BUDGET

The budget for this RWP is \$441,487, of which \$250,000 is for capital investment support under the SIP. A detailed budget is attached as Annex A.

ANNEX 1

PROPOSED SMALL INVESTMENT PROGRAM (SIP) FOR CAPITAL WORKS

In early 2013, the USAID/Liberia Municipal Water Project (LMWP) supported the Liberia Water and Sewer Corporation (LWSC) to repair and repurpose an existing small water treatment facility and establish a public water point (Figure 1). The facility, which is located on the grounds of the former Robertsport municipal treatment facility, had been constructed and operated by UNMIL to provide water for troops stationed in Robertsport prior to their departure in late 2012.

In February 2013, the facility and water point were dedicated in a ceremony presided over by President Ellen Johnson Sirleaf (Figure 2). The facility is currently in operation and water is being sold at a cost-recovery tariff rate established by LWSC, with assistance from LMWP, based on estimated operation and maintenance costs. The facility and water point are located on the outskirts of town and not easily accessible to most Robertsport residents. The water point is being utilized extensively, but customers are primarily water vendors who resell the water within the densely populated areas of town. During the dedication ceremony, President Sirleaf made an appeal to the LMWP Chief of Party to fast-track a portion of the proposed next phase of water infrastructure improvements in Robertsport in advance of the July 26th National Independence Day Celebration to be held in Robertsport. She asked that LWSC and LMWP endeavor to bring water closer to the people.

SUWASA proposes to provide funding via its Small Investment Program (SIP) for a portion of the LMWP-proposed short term improvements from its Master Plan in advance of the July 26th Independence Day Celebrations. The proposed project is depicted in the draft plans below. The proposed project includes a pipeline extension of approximately 5,025 feet (approximately 3,000 feet of 8" PVC main and 2,025 feet of 6" PVC main) extending from the existing treatment facility to the more densely populated areas of Robertsport, with two water kiosks constructed along the route. The pipe is sized to be incorporated into the larger-scale distribution system planned for the future per the Master Plan. The engineer's estimate for this work is approximately \$250,000 USD (Table 1).



Figure 1: Robertsport Water Point Established by LWSC with LMWP support



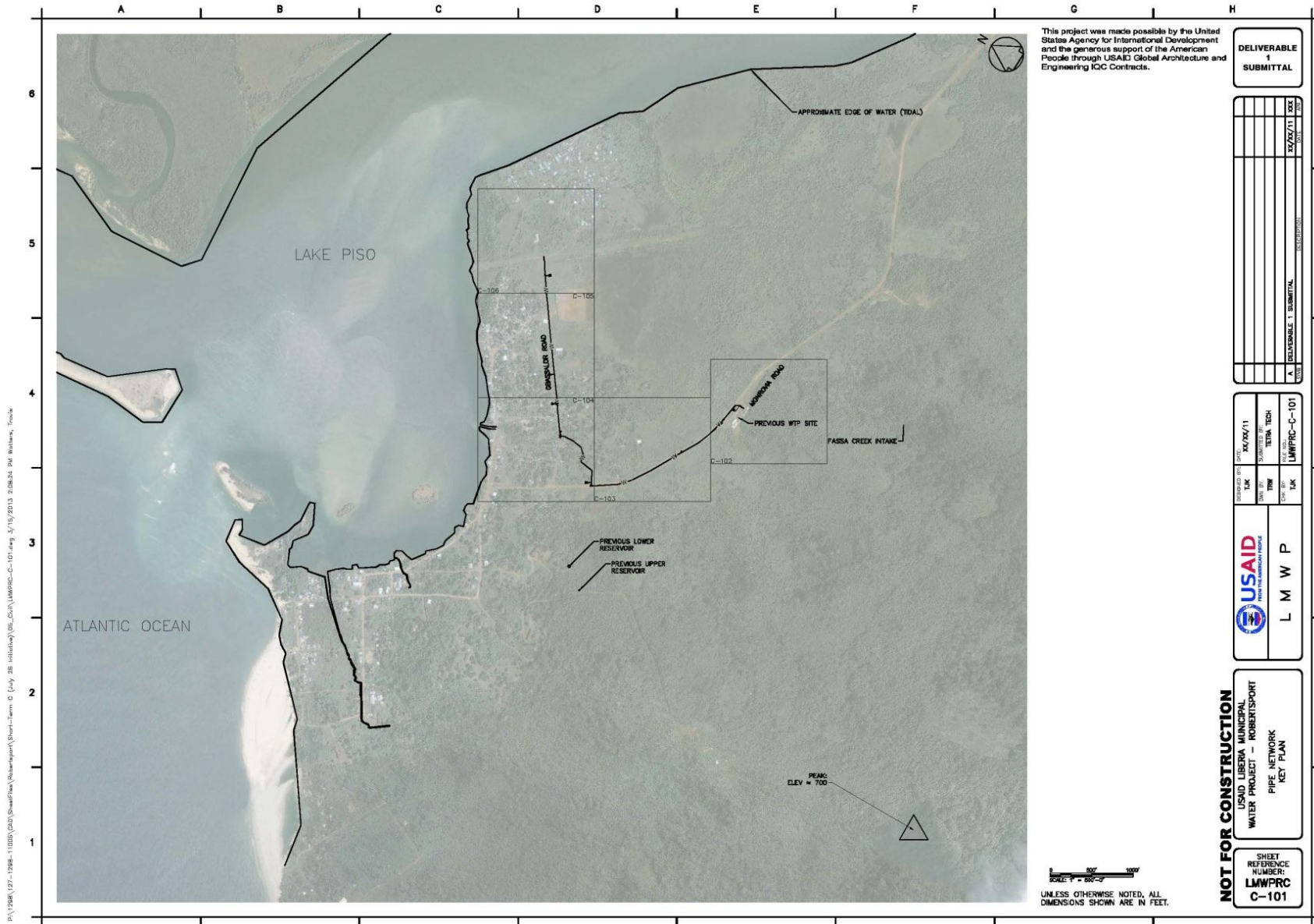
Figure 2: Robertsport Small Treatment Facility and Water Point Dedication

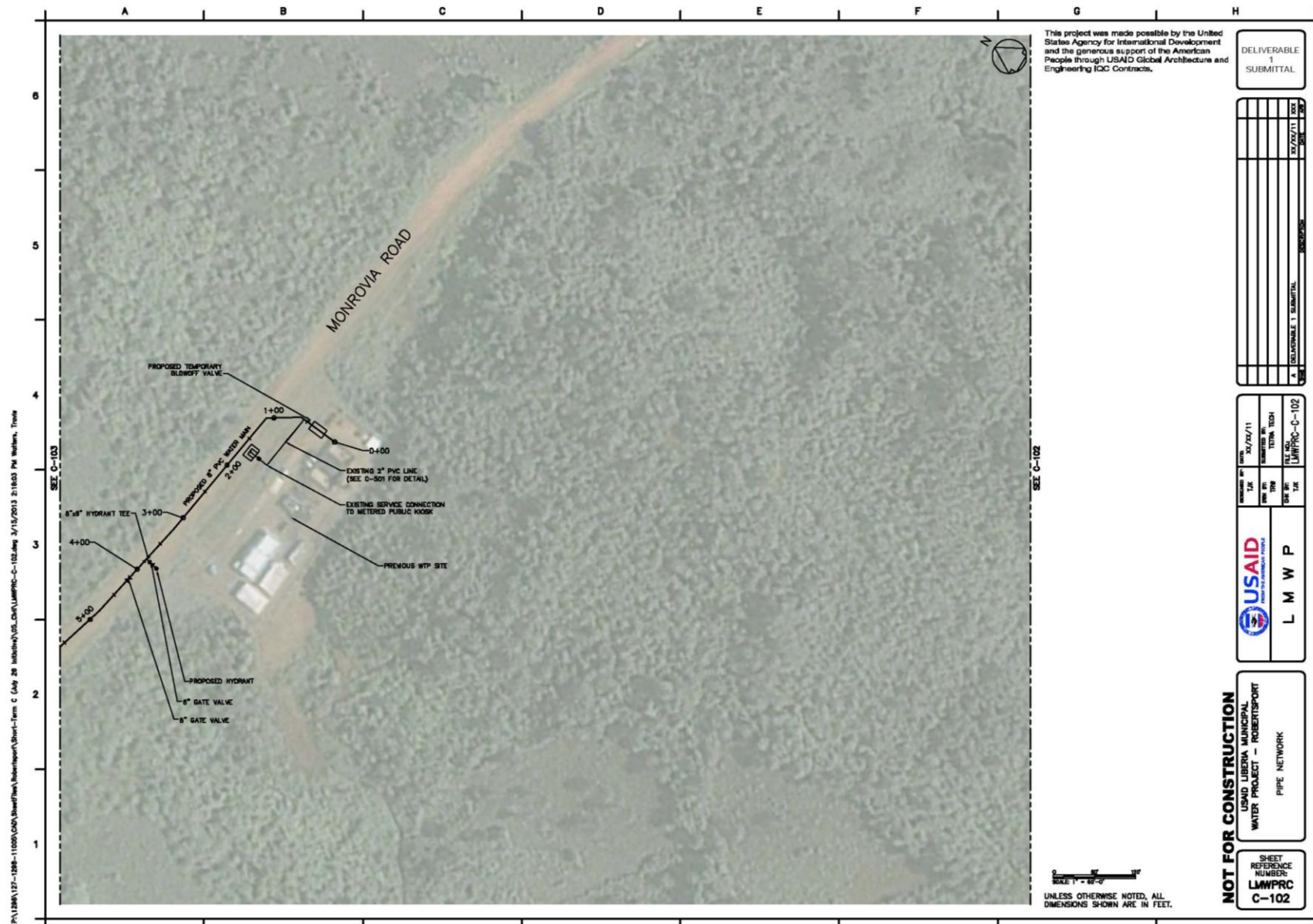
Pictured left to right holding the ribbon: Managing Director of the Liberia Water and Sewerage Corporation (LWSC) Charles Allen, Tetra Tech's Chief of Party for the Liberia Municipal Water Project (LMWP) Alioune Fall, Her Excellency President Ellen Johnson Sirleaf, and USAID | Liberia Mission Director Patricia Rader. – Photographer: Edwin Fayia of The Observer Newspaper

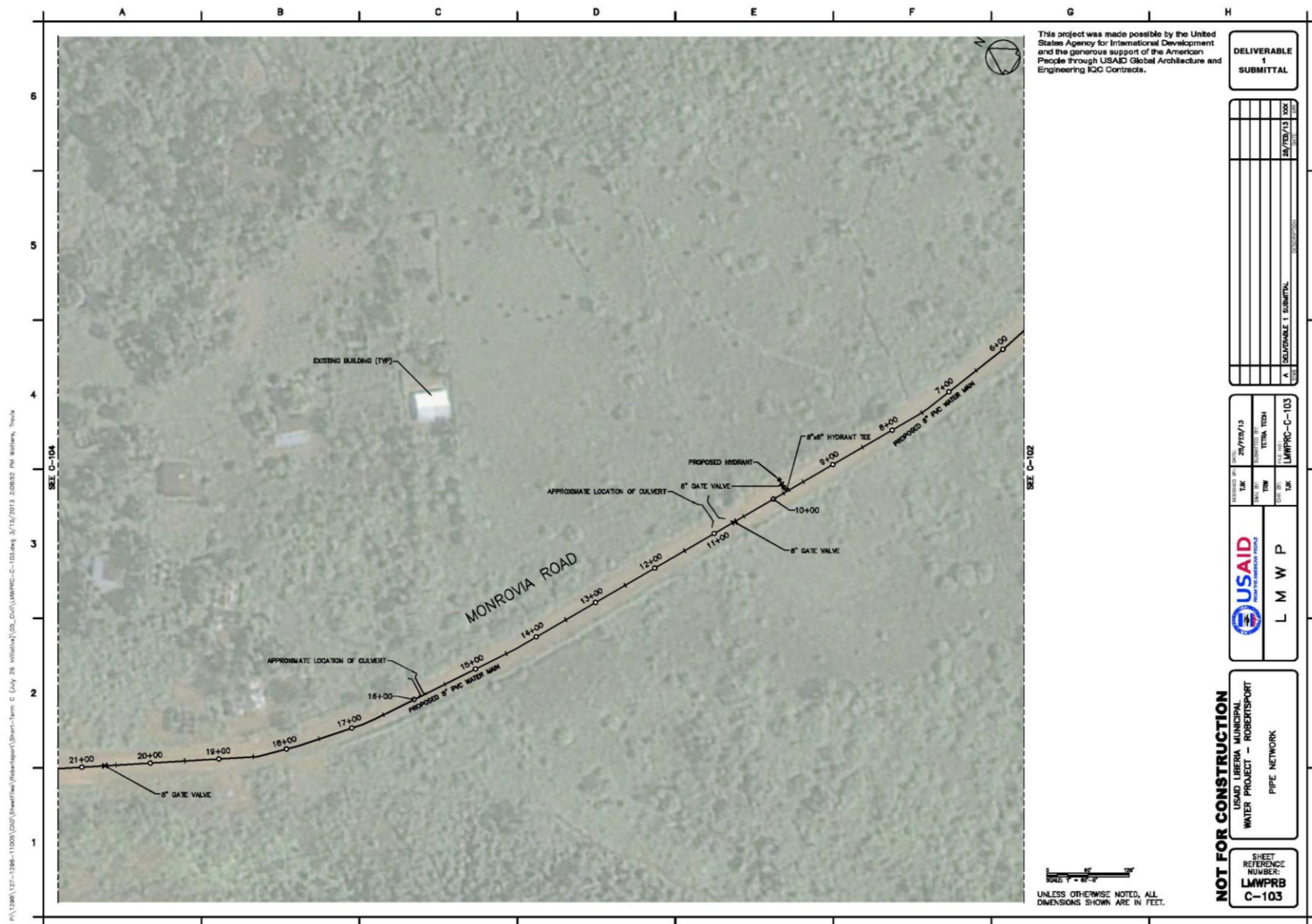
Table 1: Engineer's Cost Estimate for Proposed Robertsport, Liberia Small Investment Program (SIP)

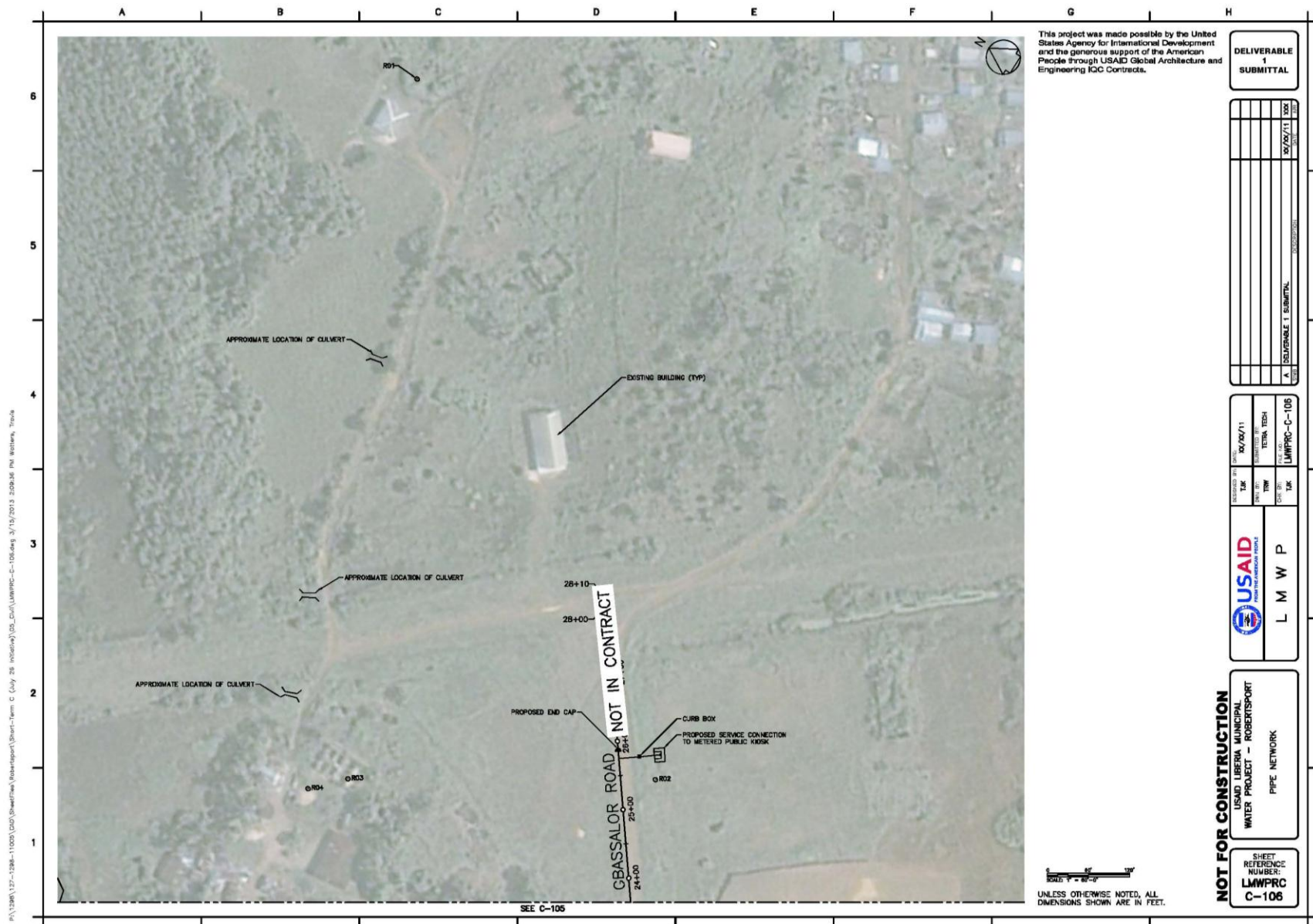
ITEM NO.	DESCRIPTION OF WORK	TOTAL CONTRACT QUANTITIES	UNIT	CONTRACT UNIT PRICE	SCHEDULED VALUE
1	Excavation Below Grade	50	CY	\$25.00	\$1,300.00
2	Trench Rock Excavation	50	CY	\$100.00	\$5,000.00
3	Portland Cement Concrete	28	CY	\$55.00	\$1,600.00
4	6" PVC Water Main	2,025	LF	\$32.00	\$64,800.00
5	8" PVC/DICL Water Main	3,000	LF	\$32.00	\$96,000.00
6	Ductile Iron Fittings	4,165	LBS	\$5.00	\$20,900.00
7	6" Gate Valve and Box	7	EA	\$400.00	\$2,800.00
8	8" Gate Valve and Box	13	EA	\$500.00	\$6,500.00
9	Fire Hydrant Installed	3	EA	\$1,700.00	\$5,100.00
10	Concrete Filled Pipe Bollards	2	EA	\$200.00	\$400.00
11	2" Copper Tubing	4	LF	\$55.00	\$300.00
12	2" Corporation, Curb Stop, and Kiosk	4	EA	\$1,200.00	\$4,800.00
13	Test Pits	8	EA	\$100.00	\$800.00
14	Allowance for Compaction Testing	1	LS	\$1,100.00	\$1,100.00
15	Allowance for Landscaping	1	LS	\$600.00	\$600.00
16	Control of Water During Construction	1	LS	\$5,100.00	\$5,100.00
17	Mobilization	1	LS	\$10,900.00	\$10,900.00
	Pipe	LF		Const Costs	\$228,000.00
	6" PVC =	2,025			
	8" PVC/DICL =	3,000			
	Total Linear Feet =	5,025	0%	% Engineering	\$0.00
	Total Linear Miles =	0.95	10%	Contingencies	\$22,800.00
				Total	\$250,800.00

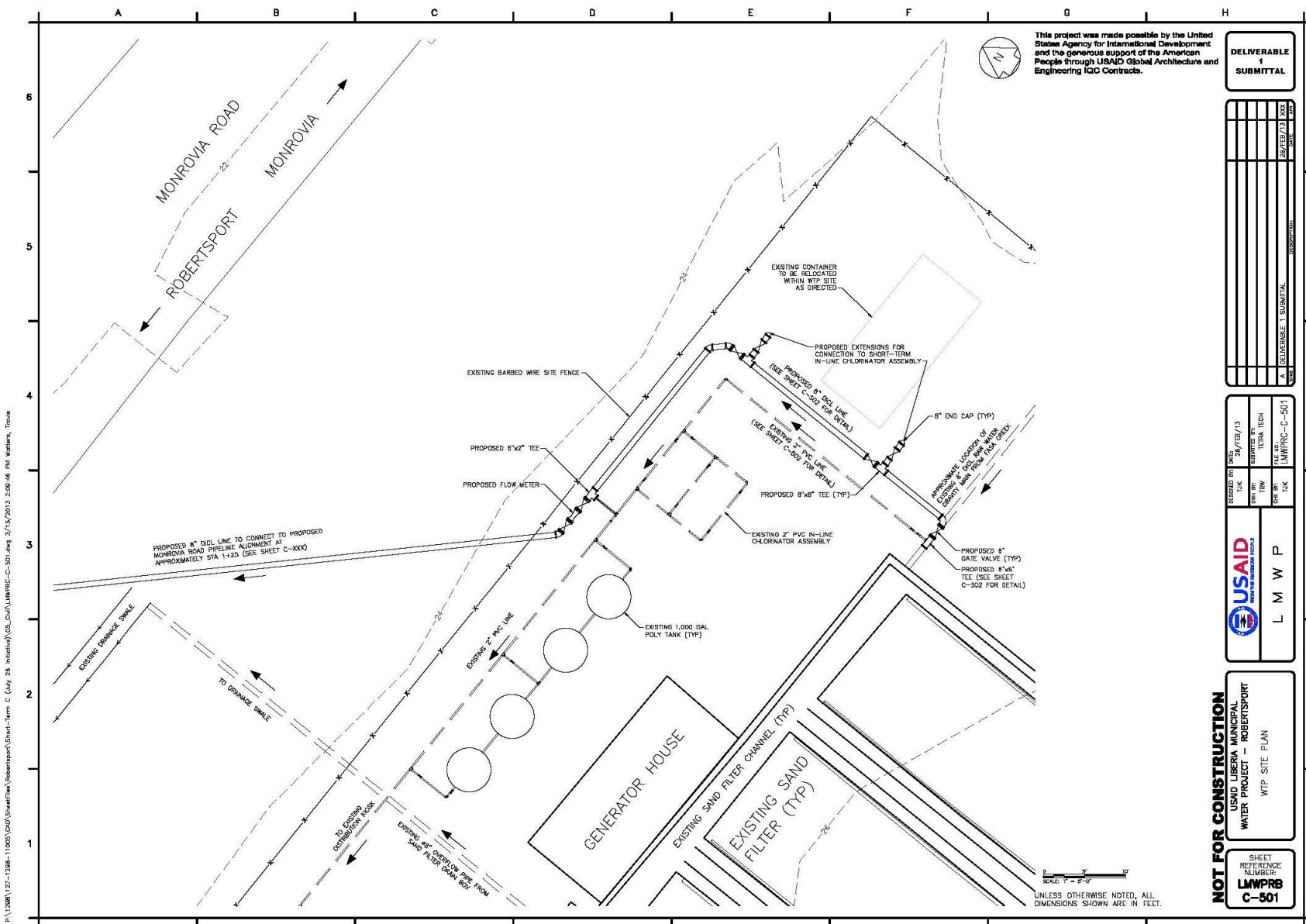
Draft Plans and Details



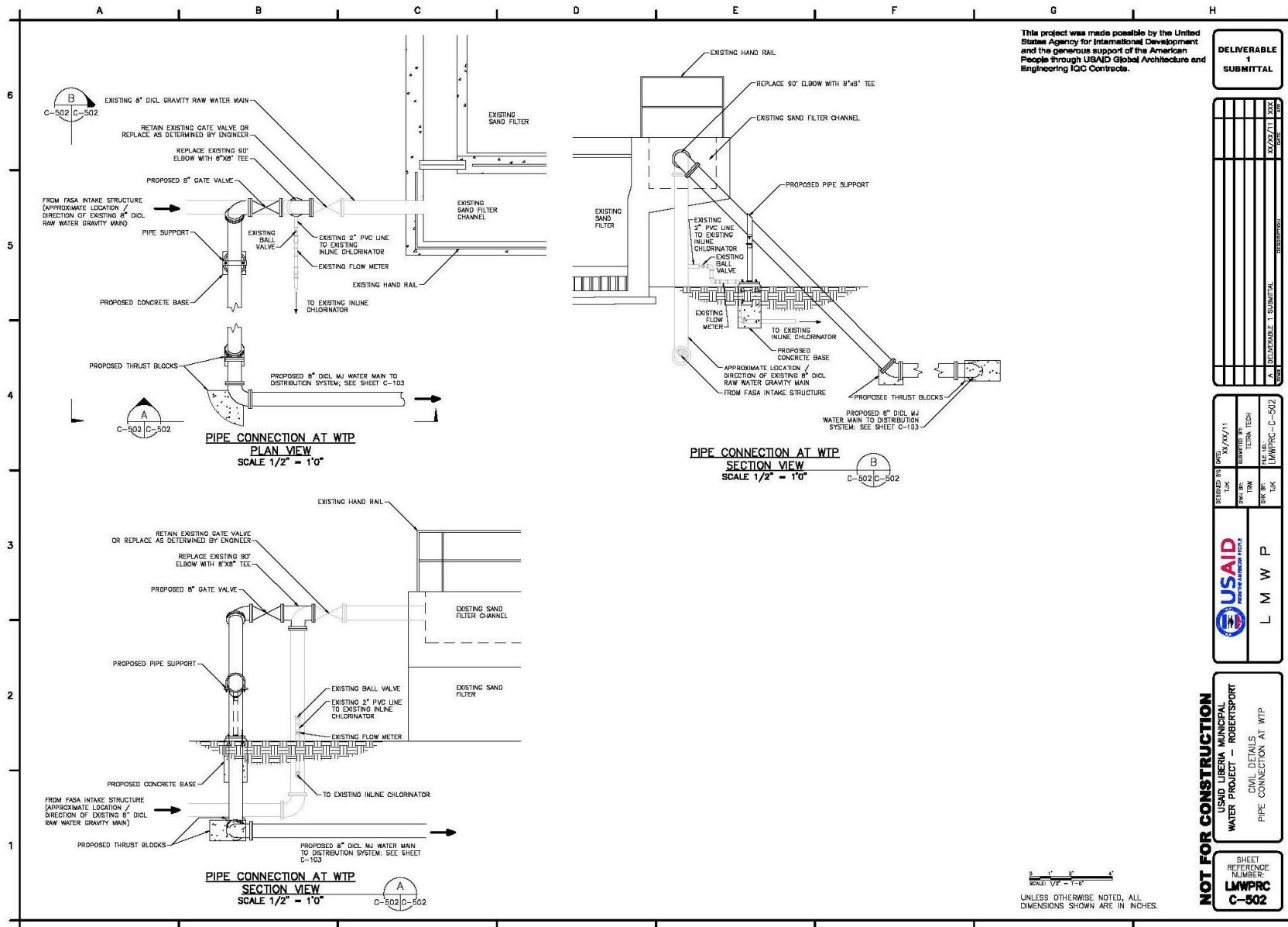








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ANNEX 2

PROPOSED ENVIRONMENTAL MONITORING AND MITIGATION PLAN

15 March 2013

ACRONYMS

EA	Environmental Assessment (same as an EIA)
EGSSA	Environmental Guidelines for Small-Scale Activities in Africa
EIA	Environmental Impact Assessment (same as an EA)
EMMP	Environmental Mitigation and Monitoring Plan
ENCAP	Environmentally Sound Design and Management Capacity Building for Partners and Programs in Africa
ESDM	Environmentally Sound Design and Management
LMWP	Liberia Municipal Water Project
LWSC	Liberia Water and Sewer Corporation'
M&E	Monitoring and Evaluation
NRW	Non-Revenue Water
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
PMP	Performance Management Plan
PO	Provisional Order
PPP	Public Private Partnerships
RWP	Reform Work Plan
SOW	Statement of Work
SIP	Small Investment Project
SPIP	Strategic Performance Improvement Plan
SUWASA	Sustainable Water and Sanitation in Africa
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene

1.0 INTRODUCTION

1.1 BACKGROUND

USAID is supporting the Republic of Liberia to realize sustainable and financially viable service delivery systems to ensure that customers have reliable access to safe and affordable drinking water supply in the recently independent country.

Building on the substantial investments that USAID has made in Liberia, the SUWASA Liberia initiative is to support the country's WASH sector institutions meet a key sector objective—ensure sustainability of water supply access through promotion of cost recovery in the urban water sector. Particular attention is being placed on the following tasks:

- Recommend and test a standardized tool to determine the cost of water service
- Design a tariff model using cost of service information
- Recommend institutional roles for tariff setting in Liberia
- Increase access to network services in Robertsport and support application of tariffs set for these services

The one year project will initially empower and support the water utilities in Robertsport to operate in an autonomous and financially sustainable manner and responsive to customer demands for affordable, reliable and safe drinking water supply. SUWASA's intervention in Liberia will leverage USAID's Liberia Municipal Water Project (LMWP) which is also implemented by Tetra Tech and is focus on three County Capitals including Robertsport. The direct implementation of this EMMP will be heavily reliant on the support of LMWP field staff for regular supervision and monitoring of SUWASA Small Investment Project (SIP) implementation.

Per USAID's Initial Environmental Examination (IEE), Annex A, this Environmental Mitigation and Monitoring Plan (EMMP) describes activities that will be carried out by SUWASA to comply with USAID's Environmental Procedures (22 CFR 216) and with the Government of Liberia's environmental, water supply, and sanitation guidelines, where they have been developed, for all activities found to have Negative Determinations with Conditions. SUWASA will follow written requirements from the Government of Liberia, in addition to the guidelines of the EMMP. This EMMP outlines a comprehensive system for mitigating, managing, and monitoring environmental impacts resulting from SUWASA activities. The EMMP for SUWASA Liberia recognizes the various implementing mechanisms the project employs for its deliverables, including use of sub-contractors, LMWP and governance structures – including but not limited to Liberia Water and Sewer Corporation (LWSC).

1.2 OVERVIEW AND OBJECTIVES OF THE SUWASA ENVIRONMENTAL MITIGATION AND MONITORING PLAN

The SUWASA Project believes the principles of environmentally sound design and management (ESDM) are critical to implement successful water and sanitation development programming. Without sustainable protection of the water sources, distribution systems, progress towards obtaining the desired sustainable health and economic growth outcomes, will be short-lived and futile. So that environmental damage is kept to a minimum and environmental benefits are maximized to the extent practicable, SUWASA seeks to incorporate ESDM into its programming. The USAID's Environmentally Sound Design and Management Capacity Building (ENCAP) program provides a definition and three basic rules

laid out for ESDM. ESDM “requires design and implementation of activities with an understanding of their environmental impacts and active efforts to minimize these impacts”. ENCAP’s three basic rules for ESDM are:

1. Be prevention-oriented;
2. Apply best development environmental aspects of the activity;
3. Be systematic.

By following USAID’s Environmental Procedures (22 CFR 216), the environmental reporting requirements of USAID/Liberia, and the guidelines and regulations of the Republic of Liberia, the SUWASA team believes that it is ensuring the application of an ESDM approach in the implementation of its Small Investment Projects (SIPs). The SUWASA EMMP outlines in detail how SUWASA will implement its SIPs in Liberia with a prevention-oriented and systematic approach. The EMMP objectives include:

1. Detailing technical and social environmental mitigation measures for each type of anticipated SIP to be conducted by SUWASA;
2. Detailing procedures for monitoring, supervising, and reporting that SUWASA will use to ensure environmentally-sound SIP programming;
3. Ensuring SUWASA compliance with USAID’s Environmental Procedures (22 CFR 216) in a systematic and comprehensive manner; and
4. Placing primary emphasis on compliance with the laws, regulations, and guidance of the RSS.

Generally, the SUWASA project subscribes to the best practices and environmental mitigation measures laid out in the *USAID Environmental Guidelines for Small-Scale Activities (EGSSAA), Chapter 16: Water Supply and Sanitation*, which have been included in Appendix B. These guidelines offer a comprehensive structure for ESDM of small-scale WASH activities that meet USAID’s Environmental Procedures (22 CFR 216). RSS guidance on water supply and sanitation program implementation is minimal and the few developed environmental regulations for the Republic of Liberia have been developed.

2.0 ENVIRONMENTAL MITIGATION AND MONITORING PLAN

2.1 POTENTIAL IMPACTS AND MITIGATION MEASURES FOR SUWASA LIBERIA PROJECT ACTIVITIES

As referenced by the USAID Initial Environmental Examination for the SUWASA Liberia Project (Appendix A) and based on the USAID Environmental Guidelines on Potential Impacts and Mitigation Measures for Small Scale Activities (Appendix B) from EGSSAA (Environmental Guidelines for Small Scale Activities), the standard impacts and best practice mitigation measures that will be undertaken by the SUWASA Project for specific small scale water and sanitation activities and technologies are outlined in Table 1 below:

Table 1: Potential impacts and mitigation measures for specific water and sanitation activities and technologies

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation Measures <i>The LWMP & SUWASA Liberia Project will...</i>
General		
Site selection	Damage sensitive ecosystems or endangered species	Survey for and avoid wetlands, estuaries or other ecologically sensitive sites in the project area
Construction of buildings and structures	Damage sensitive ecosystems or endangered species Cause erosion and sedimentation	Only be engaged in small-scale construction which will generate insignificant erosion and vegetation damage Re-vegetate areas damaged during construction – if needed
Soakaways and drains	Cause erosion Alter the natural flow of rainwater runoff Create pools of stagnant water	Use riprap (cobbled stone), gravel or concrete as needed to prevent erosion of drainage structures Support local ability to monitor and keep drains and Soakaways clear
Water Supply Improvements		
Distribution system network extension	Contaminate water with human pathogens Contaminate water with animal manure	Emphasize proper use and maintenance of the improvement as part of behavior change and education programs Train LWSC staff to perform water quality tests consistent with the requirements of the Government of the Republic of Liberia Train local management organizations to use fencing or equivalent that will keep livestock from grazing uphill or up gradient of the water supply improvement Train local management organizations to not allow animals to drink directly from the water source
	Cause erosion Alter the natural flow of rainwater runoff Create pools of stagnant water	Mitigate erosion during distribution system construction Support local ability to monitor drains and Soakaways and keep them clear of debris Use riprap (cobbled stone), gravel or concrete as needed to prevent erosion of drainage structures Train LWSC to monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures
Wells and Springs	Provide water contaminated with nutrients and bacteria from animal waste Create pools of stagnant water Change groundwater flow, create saltwater intrusion, deplete aquifer, or cause land subsidence (not applicable to wells equipped with hand pumps)	Train LWSC to perform water quality tests consistent with the requirements of the Government Train local management organizations to not allow animals to graze or be watered up-gradient from wellhead or springs Train local management organizations or well mechanics to monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and other mechanical elements that impede the safe delivery of potable water to residents

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation Measures <i>The LWMP & SUWASA Liberia Project will...</i>
Standpipes	Create pools of stagnant water (This problem can be more severe when water table is high, clay soils are present, or population/tap density is high)	Train local management organizations to ensure that spilled water and rainwater drain to a soakaway or equivalent structure and do not accumulate and create stagnant standing water Train local management organizations or mechanics to monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures
Treatment Systems		
Pit or vault latrine	Increase transmission of vector-borne diseases Contaminate groundwater supply with pathogens Contaminate water supplies, damage water quality and/or transmit disease at other locations if waste is not properly handled and treated during or after servicing Cause injury to people or animals	Promote the ventilated improved pit latrine design that traps insect vectors Ensure that a minimum of three feet distance is maintained between the seasonal high water table and the bottom of a latrine pit or vault For latrines with more than two pits or vaults, ensure that a technical and management system is developed for safely emptying pits or vaults and transporting the collected material off-site for final disposal Train community management groups how to ensure that collected material is adequately treated and not applied unhygienically to fields or otherwise disposed of improperly Stress personal Responsibility for maintaining clean hands, covering food, and maintaining a clean and functioning latrine for the entire family's use to eliminate open defecation Support existing networks of Community Health Workers and Supervisors to follow-up with communities to ensure sustainability of improved hygiene behaviors Work with feces transporters to ensure their hygienic handling of feces and washing hands and equipment after its delivery
Septic tanks or large volume pit or vault latrines	Contaminate groundwater supply with pathogens Contaminate surface water supplies with nutrients, biological oxygen demand (BOD), suspended solids (SS), and pathogens. (Septic tank effluent generally contains relatively high concentrations of pathogens, BOD, and SS) Contaminate water supplies, damage water quality and/or transmit disease at other locations if waste is not properly handled and treated during or after servicing	Evaluate depth to the water table, including seasonal fluctuations and groundwater hydrology. If water table is too high, line the tank with clay or some other impermeable material to prevent leakage Avoid direct discharge of effluent to waterways if possible. Direct discharge to waterways with sufficient volume and flow to assimilate the waste may be acceptable. It is better to discharge to an absorption field constructed wetland Ensure that a reliable system is adopted for (1) hygienically removing sludge, (2) transporting the collected material off-site, and (3) promoting that collected material is not directly applied to fields or openly in the environment

2.2 MONITORING MITIGATION MEASURES FOR SPECIFIC WATER AND SANITATION ACTIVITIES

The mitigation measures proposed in the preceding section will be monitored and reported on by a range of stakeholders in the SUWASA Liberia project. Information on the indicators of success, the schedule of monitoring, and responsibility for monitoring and reporting are shown in Table 2.

Table 2: Monitoring mitigation measures for specific water and sanitation activities under the SUWASA Liberia Project

Activity/ Technology	Monitoring Indicator(s)	Monitoring and Reporting Frequency	Party Responsible
General			
Site selection	Survey conducted for site selection to avoid wetlands or other ecologically sensitive sites that may contain endangered species.	Preliminary Site Assessments	LWSC, LMWP & SUWASA
Construction of buildings and structures	Visual inspections for damage to vegetation; sedimentation at stream crossings	Construction reporting & post-construction checklist	LWSC, LMWP & SUWASA
Soakways and drains	Visual inspection verifying absence of stagnant water and erosion	Post construction checklist	LWSC , LMWP
Water Supply Improvements			
Distribution system network extension	Safe distance from latrines (more than 10 meters); Visual inspection verifying absence of stagnant water or erosion	Preliminary Site Assessments or site IEE	LWSC, LMWP & SUWASA
Wells and Springs	Safe distance from latrines (more than 50 meters); Visual inspection verifying absence of stagnant water	Preliminary Site Assessments or site IEE	LWSC, LMWP
Standpipes	Visual inspection verifying absence of stagnant water and erosion	Post Construction Checklist or site IEE	LWSC, LMWP
Treatment Systems			
Pit or vault latrine	Visual inspections for seepage around latrine; safe distance from water points or sources (more than 50 meters)	Preliminary Site Assessments or site IEE	LWSC, LMWP & SUWASA
Septic tanks	Visual inspections for seepage around septic tank; safe distance from water points or sources (more than 100 meters)	Post Construction Checklist or site IEE	LWSC, LMWP & SUWASA

2.3 WATER QUALITY TESTING REQUIREMENTS

2.3.1 USAID Requirements

USAID's drinking water quality testing requirements are outlined in the Environmental Guidelines for Small-Scale Activities in Africa (EGSSAA) created under USAID's Africa Bureau's Environmental Compliance and Management Support (ENCAP) Program. According to this document, USAID only requires testing for arsenic in drinking water sources. Ideally water quality tests should be performed regularly on the chemical, biological, and physical quality of the proposed water sources. This responsibility is best designated to local government or management authorities. For urban areas for the case of Liberia, this responsibility will rest with the LWSC.

Comprehensive testing of water quality in Liberia is logistically difficult, costly, and time intensive. Reasonably equipped and functioning laboratories are sometimes available in Monrovia and LWMP must make reasonable commitments that meet USAID requirements, promote public health, and support the ability of local government to provide services to the Liberian population.

As SUWASA is not involved in the development of new water sources, the project is not responsible for water quality testing for water being produced by the LWSC. However, LWMP is committed to work with the LWSC to provide technical assistance on how to improve its regular operations to improve and guarantee water quality for its customers. On an ad hoc and voluntary basis, the SUWASA Liberia project may seek to conduct water quality testing on a variety of optional water quality parameters when logistically and cost uninhibited.

2.3.2 GOVERNMENT OF LIBERIA REQUIREMENTS

Water quality guidelines have been drafted by the Government of Liberia. These guidelines have yet to be formalized by the Government. However, SUWASA Liberia will work directly with LWSC in Robertsport to assist the utilities advance water quality monitoring in line with the evolving regulations.

3.0 IMPLEMENTATION OF THE ENVIRONMENTAL MITIGATION AND MONITORING PLAN

3.1 PROCEDURES AND SUPERVISION OF ENVIRONMENTAL MITIGATION AND MONITORING

All subprojects will be subject to the Environmental Procedures established by Title 22 of the U.S. Code of Federal Regulations, Part 216 (22 CFR 216). Unless they are categorically excluded, all subprojects require the preparation of an (Umbrella) Initial Environmental Review that complies with the requirements of the Environmental Threshold Decision for SUWASA.

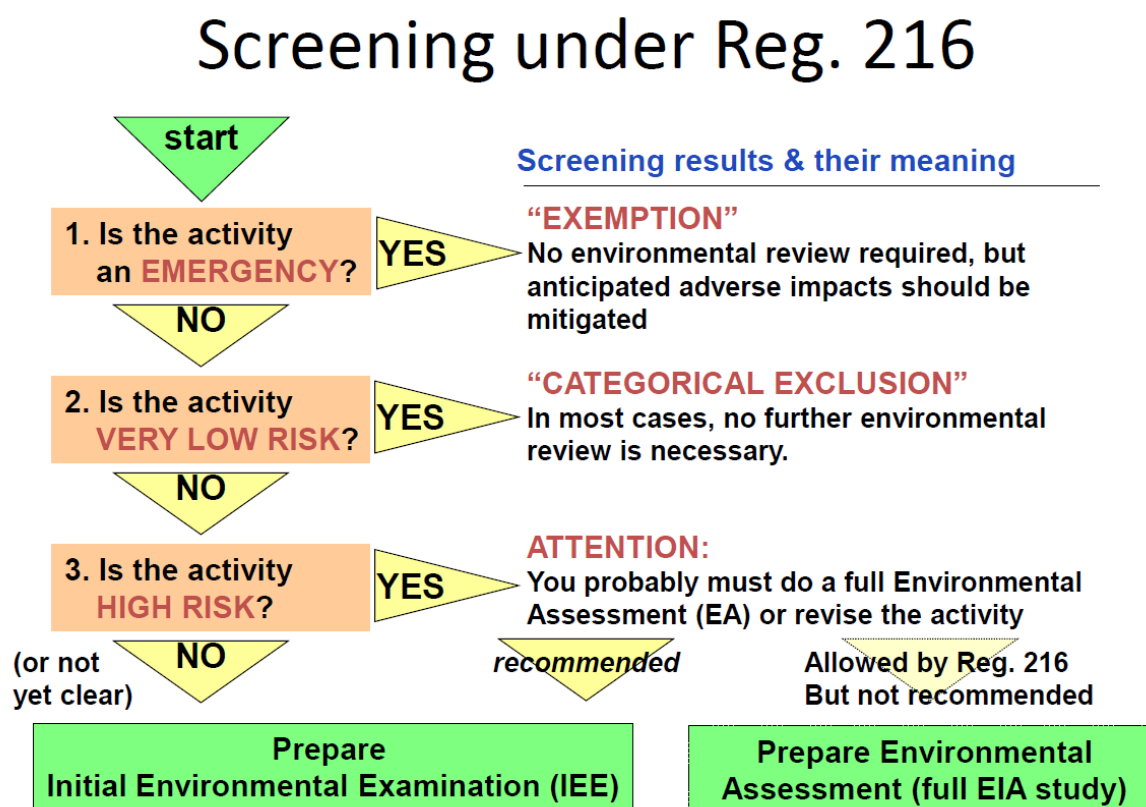
The SUWASA Liberia with the support of the LWMP implementation team will make environmental compliance and monitoring a cross-cutting aspect of staff activities under the overall supervision of the SUWASA Chief of Party. The highly decentralized nature of SUWASA work requires this. Responsibilities will be spread among infrastructure, social development, and monitoring and evaluation staff to report on monitoring and mitigation in a simple and accurate way. Their responsibilities will include conducting field evaluations of project activities to monitor environmental compliance, support implementing partners in the

design of activities to ensure early attention to environmental issues, design and lead training sessions on environmental matters, work with the contracts specialists to review local subcontracts for environmental compliance, and interact closely with the Mission Environmental Officer (MEO). In the spirit of adaptive management, these evaluations will help in the internal review of our environmental mitigation and monitoring plan and suggest modifications and improvements.

The screening of SUWASA Liberia project activities is critical for ensuring effective and efficient compliance with USAID's Environmental Procedures (22 CFR 216). The framework for the initial screening of activities was laid out by USAID in its Initial Environmental Examination (Appendix A). This examination concluded that the SUWASA program would consist of activities that fell into the categories of Categorical Exclusion, Positive Determination, and Negative Determination with Conditions. Key activities are categorized in Table 5.

The screening of SUWASA Liberia Project activities for environmental management measures will follow the flow chart below (Graphic 1).

Graphic 1: Screening under Reg. 216



Source: EGSSAA Training Presentation

The bulk of SUWASA Liberia Project activities will fall into either the Categorical Exclusion or the Negative Determination with Conditions category. A detailed breakdown of SUWASA Liberia project activities by category and environmental management measures required can be found in Table 5. For programming areas receiving Categorical Exclusion, no additional environmental management will be required. However, for activities in the Negative Determination with Condition category, IEEs or Umbrella IEEs will be required along with the mitigation measures laid out in Table 1.

In order to combine environmental best practice and efficiency, SUWASA Liberia Project will conduct Umbrella IEEs for groups of wells or latrines when similar environmental, geographic, and geological conditions exist. For all SUWASA activities that do not qualify for Negative Determination with Conditions or Categorical Exclusions (i.e. Positive Determinations), comprehensive Environmental Impact Assessments (EIA) will be carried out, assuming that USAID decides to proceed with the programming.

Table 5: SUWASA activity breakdown with environmental management requirements

Activity/ Technology	Environmental Management Measures Required
Categorical Exclusions	
Training or Capacity Building	None
Technical Assistance	None
Research, Analyses or Studies	None
Workshops or Meetings	None
Negative Determination with Conditions (small scale WASH activities)	
Site selection	IEE or Umbrella IEE, Mitigation Measures from Table 1
Construction of buildings and structures	IEE, Mitigation Measures from Table 1
Soakaways and drains	IEE or Umbrella IEE, Mitigation Measures from Table 1
Distribution system network extension	IEE or Umbrella IEE, Mitigation Measures from Table 1
Drilled or bored wells	IEE or Umbrella IEE, Mitigation Measures from Table 1
Standpipes	IEE, Mitigation Measures from Table 1
Pit or vault latrine	IEE or Umbrella IEE, Mitigation Measures from Table 1
Septic tanks	IEE, Mitigation Measures from Table 1
Positive Determination	
All WASH activities that are confined to small scale activities that do not qualify for Negative Determination with Conditions or Categorical Exclusions.	IEE and a full EIA study

3.2 REPORTING

For its environmental mitigation and monitoring reporting, SUWASA Liberia Project will be using the environmental forms adapted by forms used by other USAID mission. For activities included as Categorical Exclusion in Table 5, no further environmental reporting will be required. For all activities in the Negative Determination with Conditions category, SUWASA will use the Form #1 Screening Check List, the Form #2 Mitigation Plans, and Form #3 Monitoring Report (Appendix C). For all other activities that receive a Positive Determination, a complete Environmental Impact Assessment (EIA) will be conducted with prior approval from USAID/Liberia.

In order to provide guidance for future SUWASA environmental reporting, a sample set of environmental reporting forms have been completed for an example project for distribution system network extension (example forms below).

EXAMPLE FORM 1: SCREENING CHECKLIST



Form #1 Sustainable Water and Sanitation in Africa (SUWASA) Project Subproject Environmental Screening Checklist

Version: October 2012

Complete this form for all infrastructure subprojects, or other subprojects that may directly affect the environment.

Subproject Threshold Determination (Check this section after completing the Subprojects Risks Categories checklist)

<input type="checkbox"/>	Categorical Exclusion (studies, capacity building, conflict resolution, and technical assistance)
<input type="checkbox"/>	Negative Determination without Conditions (low-risk subprojects that do not require mitigation measures)
<input checked="" type="checkbox"/>	Negative Determination w/ Conditions I (low-moderate risk subprojects that will have no significant impacts given mitigation & monitoring)
<input type="checkbox"/>	Negative Determination w/Conditions II (moderate to high risk subprojects that can be addressed through an expanded Mitigation Plan)
<input type="checkbox"/>	Positive Determination (high-risk subprojects that require an Environmental Assessment to identify adequate mitigation measures)

Subproject Budget

<input type="checkbox"/>	Less than US\$100,000 (generally "small-scale")
<input checked="" type="checkbox"/>	US\$100,000-300,000 (generally "medium-scale")
<input type="checkbox"/>	More than \$300,000 (generally "large-scale")

Project Code:	0001
Type of Subproject:	Distribution System Extension
Subproject Name:	Robertsport Distribution System Extension (Phase 1)
Location:	Robertsport Town, Liberia
GPS Coordinates:	Latitude: N 6.75 Longitude: W 11.36
Subproject Budget:	\$250,000
Subproject Size:	2 KM of Water Mains & Public Tap Construction
Subproject Supported By:	Implemented by SUWASA under LMWP supervision
Type of Ecosystem:	Urban
Nearby Villages:	
Desired Start Date:	15-Apr-13

Description of Proposed Activity:

See Attached Small Investment Program (SIP) detailed work plan.

Please complete relevant sections (sector-specific and environmental setting). For each "yes" answer, put an "X" in the white cell to the right. Risk criteria are for reference only and are highly influenced by the environmental setting. Provide an "all things considered" discussion of risk in the "Additional Comments" section below, using your best judgment, and on that basis select the appropriate Subproject Threshold Determination category above.

Subproject Risk Categories Based on Type of Activity, Scale, and Environmental Setting		Potential Risk		
Drinking Water Supply		Low	Moderate	High
Does the project rehabilitate an existing water supply system?		YES		
Is the project a new water supply system that serves less than 5000 people?			N	
Is the project a new water supply system that serves more than 5000 people?				N
Is the water supply from an unprotected source (surface water, unlined well, etc.)?				N
If a well, has there been any observed drop in the water table, recent or historical, that suggests groundwater resources are being depleted?				N
Buildings		Low	Moderate	High
Is the subproject limited to rehabilitation of existing structures?		N		
Does a construction subproject result in < 1,000 sq. meters of "disturbed area"? (defined as the building site plus all site preparation and materials storage areas, worker changing, sanitation, washing, eating and cooking areas, etc.)?		N		
Does the construction subproject result in between 1,000 sq. meters to 10,000 sq. meters of disturbed area?			YES	
Does the construction subproject result in >10,000 sq. meters of disturbed area?				N
Land Use/Environmental Setting		Low	Moderate	High
Will the subproject have no significant change on the existing land use?		N		
Will the subproject moderately change the existing land-use, and if so, can associated impacts be readily mitigated?			N	
Will the subproject encroach upon any sensitive habitats (wetlands or habitat for endangered species), designated protected areas, or archeological sites?				N
Will the proposed activity have a <i>locally unacceptable</i> impact on any cultural assets such as mosques and cemeteries?				N

appropriate 'yes' or 'no' answer in the last column. 'Significance' is determined by the magnitude, intensity, and duration of the potential impact and its probability of occurring -- use your best judgment. Where warranted, provide additional details in the 'Additional Comments' section below.

Potential Social and Environmental Impacts (in the Absence of Mitigation Measures)

	Potential Impacts in the Absence of Mitigation Measures			
		Yes	N/A No	If Yes, can mitigation measures be taken?
Air	Will the proposed activity result in significant air pollution or dust emissions beyond just short-term, localized impacts during the construction period?		X	
Surface Water	Will the proposed activity degrade surface water quality through surface run-off or direct discharges of fecal matter (human or animal) or agro-chemicals (fertilizers and pesticides)?		X	
	Will the proposed activity cause increased soil erosion and associated sedimentation/siltation or changes to hydrologic flow regimes of nearby water bodies?	X		During construction greater than normal soil erosion will be mitigated by subcontractor with erosion controls
	Is the proposed project within the flood plain or will it increase the risk or magnitude of floods?		X	
Ground Water	Will the proposed activity degrade groundwater quality through surface run-off or direct discharges of fecal matter (human or animal) or agro-chemicals (fertilizer and pesticides)?		X	
	Will the proposed activity be located adjacent to or near existing wells, especially ones that provide potable water?		X	
	Is the water table less than two meters below ground surface (and therefore susceptible to contamination)?		X	
Land and Soil	For irrigation subprojects, will crop productivity be threatened by increased soil salinity (use of agro-chemicals) or water-logging (inadequate drainage)?		X	
	Will the proposed activity significantly increase the risk of soil erosion by wind or water?		X	
	Will rock, sand or other materials from borrow pits be used in the proposed activity?		X	
Nuisance	Will the proposed activity interrupt transportation, water supply, or energy for more than one week?		X	
Habitats <i>Use maps and photos.</i>	Will the proposed activity occupy, encroach upon, discharge to, or otherwise alter a sensitive habitat (wetlands or habitat of a threatened or endangered species)?		X	
	Will the proposed activity result in significant land clearing or removal of existing vegetation?		X	
	Will the proposed activity improve access to relatively un-degraded forests?		X	
Social Cohesion and Values <i>Consult with local shuras for localized impacts, and neighboring shuras or district authorities for impacts that can extend beyond a single community.</i>	Will people lose land, buildings, pasture, trees, or other resources as a result of the subproject? Or will the activity damage existing infrastructure?		X	
	Will the proposed activity potentially conflict with local social norms or practices?		X	
	Will the activity potentially create natural resource conflicts by 1) reducing the quantity or quality of surface or ground water available to downstream users or other communities in the vicinity, 2) diverting water from one use to another within a community to the detriment of some households or subgroups (such as women's access to water), or other reasons?		X	
	Will the activity cause a potential increase in ethnic or tribal tensions (by creating perceptions of inequities or other reasons)?		X	
	Is a documented land-use agreement with the responsible local authority for the activity pending?		X	
	Was the project identified and proposed by an entity other than the affected local authority? If yes, explain below.		X	
	Will workers handle any dangerous materials (pesticides, fuel, explosives, etc.)? Describe below.		X	

Human Health and Safety	Has there been any recent discovery of land mines in the area?		X	
	Is there a potential for violent attack on project staff or partners?		X	
	Will the proposed activity leave standing water that can stagnant and provide habitat for mosquitoes?		X	
	Are there any other significant worker safety concerns associated with construction activities (accidents, etc.)?		X	
Other	Is there a potential for significant cumulative environmental impacts? Is there a significant number of similar subprojects in the vicinity (planned or ongoing), particularly those that increase the consumption of natural resources?		X	
	Are there any other significant potential impacts or concerns that have not been covered by one of the questions above? Describe below.		X	

Additional Comments Regarding Risk: *(Provide any additional information and analysis that supports your threshold decision.)*

No additional comments.

Certification

I, the undersigned, certify that:

1. The information on this form is correct and complete.
2. The following actions have been or will be taken to assure that the activity complies with environmental requirements per USAID Reg. 22 CFR 216 and the Initial Environmental Examination [File no. _____]:

- ☐ Those responsible for implementing the activity have received training and/or documents describing essential design elements and best practices for activities of this nature.
- ☐ These design elements and best practices will be followed in implementing this activity.
- ☐ Any specific mitigation or monitoring measures described in the attached information will be implemented in their entirety.
- ☐ Compliance with these conditions will be regularly confirmed and documented by on-site inspections during the activity and its completion (security conditions permitting).

LWMP FIELD STAFF
Preparer (signature)

1-Apr-13
(Date)

LWMP FIELD STAFF
Approval (signature) (add name/title)

1-Apr-13
(Date)

EXAMPLE FORM 2: MITIGATION PLAN



Form #2 Sustainable Water and Sanitation in Africa (SUWASA) Project Subproject Mitigation Plan

Version: October 2012

Project Code:	0001
Type of Project:	Distribution System Extension
Subproject Name:	Robertsport Distribution System Extension (Phase 1)
Location:	Robertsport Town, Liberia

Based on the Screening Checklist and in the relevant sector category below, fill in the potential impacts identified for this sub-project; the recommended mitigation measures (to include indicator); and the responsible party.

	Potential Impacts	Recommended Mitigation Measures and Result Indicators	Responsible Party & Comments
All Subprojects			
Drinking Water Supply			
1	Distribution system network extension	Indicator: Safe distance from latrines (more than 10 meters); Visual inspection verifying absence of stagnant water or erosion	LWMP field staff with Reports to SUWASA
		Mitigate erosion during distribution system construction Support local ability to monitor drains and soakaways and keep them clear of debris Use riprap (cobbled stone), gravel or concrete as needed to prevent erosion of drainage structures Train SSUWC to monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures	LWMP field staff with Reports to SUWASA
		Emphasize proper use and maintenance of the improvement as part of behavior change and education programs Train SSUWC staff to perform water quality tests consistent with the requirements of the Government of the Republic of South Sudan Train local management organizations to use fencing or equivalent that will keep livestock from grazing uphill or up gradient of the water supply improvement Train local management organizations to not allow animals to drink directly from the water source	LWMP field staff with Reports to SUWASA
Buildings			
Other Subproject Category Not Listed Above?			
	(Insert here)		
	(Insert here)		
	(Insert here)		

Additional Comments

No additional comments.

Example Form 3: Mitigation Monitoring Report



Form #3 Sustainable Water and Sanitation in Africa (SUWASA) Project Mitigation Monitoring Report

Version: October 2012

Project Code:	0001
Type of Project:	Distribution System Extension
Project Name:	Robertsport Distribution System Extension (Phase 1)
Location:	Robertsport Town, Liberia
SUWASA Approval:	Team Leader Date: March 15, 2013
Monitoring Period:	April 15 to August 15, 2013

Copy all selected mitigation measures from the Mitigation Plan into the table below. All mitigation measures should be overseen and reported by the _____ (need to discuss with M&E team to determine best practice for monitoring). Results may include: (1) implemented and effective, (2) implemented with effective corrective actions, (3) implemented and ineffective, or (4) not implemented. "Effective" is defined as the absence of unacceptable impacts. Provide an explanation in the comments column in all cases of results 2, 3, or 4. Result indicators are provided for selected measures. For all other measures, simply verify that the measure has been implemented and that there is no evidence of deterioration of protective structures. Social impacts will be assessed in consultation with the community management committee during post-implementation subproject evaluations (random sample) (again - need to discuss with M&E Team for best process).

No.	Mitigation Measure and Result Indicators	Reported by: (Engineer)	Date	Verified/Monitored by: (M&E Specialist)	Findings		Date
					Result #	Comments	
1	Safe distance from latrines (more than 10 meters)	LWMP	1/20/2013	SUWASA	1	Safe distance from latrine verified	4/20/2013
2	Visual inspection verifying absence of stagnant water or erosion	LWMP	1/25/2013	SUWASA	2	Erosion control confirmed	5/25/2013
3	Visual inspection verifying absence of stagnant water or erosion	LWMP	2/1/2013	SUWASA	3	Erosion control confirmed	6/1/2013
4	Visual inspection verifying absence of stagnant water or erosion	LWMP	2/10/2013	SUWASA	4	Erosion control confirmed	7/10/2013

APPENDIX A

USAID INITIAL ENVIRONMENTAL EXAMINATION (IEE) FOR THE SUWASA PROJECT



USAID
FROM THE AMERICAN PEOPLE

U.S. Agency for International Development
Bureau for Economic Growth, Agriculture, and Trade
Washington, DC 20523

INITIAL ENVIRONMENTAL EXAMINATION and/or REQUEST FOR CATEGORICAL EXCLUSION

File No: _____
Sustainable Water and Sanitation in Africa

PROGRAM/ACTIVITY DATA:

Objective/Area:	IIP/Health/ Water and Sanitation
Contract Name:	Sustainable Water and Sanitation in Africa
Contract Number:	_____
Originating Office:	EGAT/NRM
Funding Start Date:	December 2008
Funding End Date:	December 2011
LOP Amount:	\$20,000,000
Location:	Sub-Saharan Africa
IEE Prepared by:	Jessica Tulodo, EGAT/PR/UP
Date:	August 14, 2008
IEE Amendment (Y/N):	No
If "yes", Date of Original:	---

ENVIRONMENTAL ACTION RECOMMENDED: (Place X where applicable)

Categorical Exclusion:	Deferral:
Positive Determination:	Negative Determination: <input checked="" type="checkbox"/>
With Conditions: <input checked="" type="checkbox"/>	Exemption:

BACKGROUND:

Project Purpose: USAID is bringing the "blue revolution" to sub-Saharan Africa by implementing a comprehensive approach to improving water and sanitation services. The strategy aims to build stronger water and sanitation utilities, improve the regulatory environment, build capacity for integrated water resources management, and develop innovative methods to spur local investment. In addition, programs will address transboundary management issues and use water as an entrée point to build local capacity to mitigate and manage conflict. Building on the success of on-going water reforms within the region, the objective of the Sustainable Water and Sanitation in Africa

(SUWASA) project is to promote the development and transfer of innovative practices in water and sanitation utility reform, and to demonstrate sustainable business models for expanding services to poor consumers.

The project will run for three years with an optional extension for two one year periods. USAID's Africa Bureau; Economic Growth, Agriculture and Trade Bureau, and Missions will make up to \$20 million available for the first three years of this regional program.

The project will provide technical assistance and small capital grants to support specific reform initiatives that improve management, delivery, and finance of water and sanitation services. Focus countries for reform support include Ethiopia, Democratic Republic of Congo, Ghana, Kenya, Mozambique, Nigeria, Sudan, Tanzania, and Zambia. The project will also support innovative approaches to expansion of water and sanitation services into slum and peri-urban areas. In addition, SUWASA will help to establish sustainable financing mechanisms for the water sector by assisting to develop a water revolving fund for utilities in countries that have credible plans for the development of such a fund.

The Challenge

Sub-Saharan Africa is struggling to meet the Millennium Development Goal (MDGs) target of halving the proportion of people living without sustainable access to safe drinking water and basic sanitation by 2015. The region is experiencing the highest rates of urban growth in the world with most of that growth occurring in slums with no access to basic environmental services. A burgeoning population, limited financing and capacity at the national and local levels combined with conflicts throughout the region are stressing already weak systems. Rather than increasing access many countries are actually starting to backslide. For example, a study conducted by UN HABITAT noted that in many urban sites in East Africa over the past 30 years, water supplies have actually become significantly worse over the past 30 years due to lack of maintenance and deterioration of infrastructure.¹ The UN HABITAT report went on to stress the failure of institutions that provide water in towns and cities in Africa, stating:

“...deficiencies in water and sanitation provision in cities are often as much a result of inadequacies in the institutions with responsibilities for providing water and sanitation, and governance structures within which they operate, as a lack of funds. This makes the task of improving provision more difficult. This helps explain why progress has been so limited.”²

Although some countries in sub-Saharan Africa have made great strides in developing the necessary policy and governance frameworks to improve the performance of basic water and sanitation services, the reforms are just beginning to show larger scale increases in access to improved services. Experience is showing that countries that adopt well designed water utility reform plans are making substantial progress in terms of access to services, financial capacity to sustain and expand services, and improvements in the

¹ UN HABITAT, *Water and Sanitation in the World's Cities*, page 42.

² UN HABITAT, *op cit.*, page xxiv.

quality of services provided. Examples such as Uganda, Cote d'Ivoire, Senegal and Zambia show that reform works. However, in the majority of sub-Saharan countries, broad utility reforms that lead to sustainable services for the poor are either just beginning, or have yet to start. In addition, local capacity to plan for and manage services is very limited; without strong support from the national level, local government institutions often cannot fulfill their obligations to deliver services.³

In urban and peri-urban areas, utilities generally serve the higher income sections of the town or city, leaving poor and marginalized populations unserved. The result is that the poor generally pay high prices to vendors and other informal networks compared to the tariffs charged by utilities for piped water.⁴ In addition, it is well known that water utilities that have financial difficulties rarely are able to systematically improve sanitation either by building and maintaining sanitary drainage or wastewater collection and treatment systems. Expanding water services to poor urban communities can be cost effective and can have considerable impact on achieving the MDG targets. However, it is necessary in most countries to undertake utility reforms to expand services into poor areas on a sustainable basis.

A final issue that remains a serious constraint is the limited level of financing available for investment to improve or expand service delivery. Cash-strapped central governments do not have sufficient resources available in the national budget to meet the capital investment needs nor do donors such as the World Bank or Africa Development Bank. Reliance on limited capital grants or concessional lending creates dependency and is a disincentive to performance. With weakly managed utilities and distortions to the market created by the prevalence of grants and donor lending, domestic capital markets are under-developed and not providing much needed resources for the water sector.

Utility Reform and Governance

Poorly managed utilities are characterized by high levels of non-revenue water due to poorly managed and maintained systems, weak investment planning, non-commercial practices, limited consumer orientation, and insufficient attention to the poor.⁵ The absence of good corporate governance and management means that utilities have limited or no access to new sources of capital financing and their ability to invest in even routine repairs is minimal, this leads to a cycle of decline and ever poorer levels of service.

³ Water and Sanitation Program (World Bank). 2006. Is Africa on target to meet the Millennium Development goals on water supply and sanitation? A status overview of sixteen African countries (draft for circulation).

⁴ For example, an IFC-financed Willingness to Pay Study conducted in Lagos State, Nigeria in 2001 found that almost 37% of households in Lagos State relied on street vendors for water supply, and that while water from the public utility was sold at an average tariff rate of about 2 US cents a cubic meter, the poor generally paid between 50 cents and \$5.00 to buy water from vendors.

⁵ For example, prior to reform, Lagos State Water Corporation had 97% non-revenue water. Similarly, in Uganda, prior to reform, non-revenue water was 51%, and it declined to about 29% presently.

The World Bank has recently issued several major studies, including cases from sub-Saharan Africa, which address characteristics of good water utilities; service models for the poor; innovative financing models; the challenge of financing sanitation; water pricing, regulation, and cost recovery; and the transition to bankability. USAID has also conducted a number of studies recently that support similar conclusions, emphasizing the importance of corporate governance and utility reform. The evidence is clear that bankrupt, poorly managed utilities rarely can serve poor consumers sustainably, while reformed utilities have shown dramatic ability to expand quality water and sanitation services to the poor.⁶

The combination of water sector reform and improvements of utility-level management and governance can turn this situation around. While the a utility's transition to good performance may take several years, the conditions for good utility performance are well understood and are as relevant to utilities in sub-Saharan Africa as in other parts of the world. In addition, the building blocks for reform are generally known among African water sector personnel. What is needed is support for specific reforms. In many cases, the support that is needed is technical assistance, not large amounts of new capital investment. In general, funds for capital rehabilitation, for installation of new, improved systems, and for expansion into poor neighborhoods can be obtained once donors see that real progress in reform is occurring. In addition, there are numerous examples of utilities that have first reformed, and due to the improvements, they become able to pay a significant part of their capital financing needs through internally generated earnings.⁷

The types of reforms that have been demonstrated to be successful in “fixing” troubled water and sanitation utilities include:

- Corporatization and introduction of improved procedures and mechanisms for corporate governance;⁸
- Use of operating contracts between the utility and the public agency responsible for supervising water companies;
- Introduction of incentives for employees that directly tie bonuses to performance improvements;
- Introduction of improved commercial systems, including metering and metered billing;
- Introduction of effective economic regulation; and

⁶ Good examples in Africa demonstrating the impact of reform on service to the poor include Uganda, Cote d'Ivoire, Zambia and Senegal.

⁷ For example, after 6 years of reform, Uganda's National Water & Sewerage Corporation now generates about 40% of their capital investment funds through internal earnings.

⁸ Examples of specific corporate governance improvements are described in USAID's Good Practices in Water Utility Corporate Governance, available from the USAID Office of Infrastructure & Engineering.

- Models for delivering services to poor consumers that are financially sustainable and tailored to local needs.

There is a major opportunity to help reforming utilities introduce new service models for poor consumers. In many cases, these “sustainable” service models for the poor require that the utility be able to charge customers a water tariff that is close or equal to the cost of delivering service. In addition, it is often essential to allow the utility to establish new types of service connections, payment arrangements, and service norms.

Moving away from a strict reliance on donor funds or capital grants from the central government towards more market-based financing also requires that utilities are well managed. Simply put, bankrupt utilities are not viewed as attractive borrowers. There are a variety of financing options that can serve “bankable” utilities, ranging from commercial loans, to the establishment of revolving funds, pooled financing or bonds. National and sub-national governments need to utilize scarce government and donor resources more effectively and where possible access private sector resources. Utility reform and governance lays the foundation not only for improved operations and financial viability but is a necessary first step to accessing the domestic capital markets.

Local Initiatives and Resources

There are a number of associations, initiatives, capacity building programs and capital investment projects in the region that can serve as partner organizations for the USAID SUWASA Project. These include the African Water Utility Operators Partnership, the African Water Association, the Water & Sanitation Program, and the International Water Association. In addition, several leading donor organizations, including the World Bank, WSP, UNDP, EU Water Initiative, and the African Council of Ministers Water Initiative have established a MDG Action Plan with specific plans for 16 sub-Saharan countries. The SUWASA project will work alongside these organizations and initiatives to identify and assist specific water utility reforms that are aimed at achieving the MDGs related to water and sanitation.

For example, the African Water Association (AfWA) headquartered in Abidjan, Cote d'Ivoire aims to be a pan-African organization bringing together all utilities in Africa. AfWA is a member organization which is successfully sustained by member dues. To date, AfWA is most active in West Africa with some activity in the other regions. Major activities include scientific committee meetings working on technical aspects of utility services; regional conferences and events; and, a website and monthly newsletter.

The International Water Association (IWA), which is a global association, has strong membership participation through the East and Southern Africa (ESAR) regional association as well as from individual members in other parts of the continent. IWA has been involved in developing training materials and supporting workshops related to water and sanitation utility reform and performance improvement with a strong emphasis on the development of Water Safety Plans.

Another potential resource is the African Water Utility Operators Partnership (WUP), a joint program initiated by the Union of African Water Suppliers (UAWS), the Regional Centre for Low Cost Water and Sanitation (CREPA), and the Centre for Training, Research and Networking for Development (TREND). Launched in 1996 with the support of the World Bank, AWUOP aims to build a partnership among African water supply and sanitation utilities and other key sector institutions to create opportunities for information sharing and capacity building. AWUOP emphasizes the need for utility reform including promotion of regulatory frameworks, benchmarking of utilities, development of tools for better utility management and reduction of unaccounted for water and promoting utilities to engage in providing services to the urban poor as well as working with other secondary suppliers such as small scale providers. Organizations like this will be a mechanism for identification of specific reform initiatives that will be supported by the SUWASA project.

There have been remarkable and well documented successes in improving water supply and sanitation services in sub-Saharan Africa as a result of utility reforms. The best examples are probably Uganda, Senegal, Cote d'Ivoire, Burkina Faso, and Mozambique. However, many countries in Africa have not yet embarked on reforms, or if they have, some have run into implementation problems. Clearly, at this time, there are immediate opportunities to build on successes in countries like Uganda and Senegal, and to spread these effective innovations to other African countries. There is an opportunity to work with countries – and individual utilities – to introduce the reforms that have proven to be effective in expanding access to water and sanitation services. In addition, where reforms have been implemented at the sector and utility level, there are opportunities to develop sustainable financing mechanisms to finance infrastructure investments.

The SUWASA project will support local reform initiatives either at the utility level on specific management or service delivery issues or at the national level on sector reforms such as financing. The project will use the existing Africa-wide water organizations as a platform to identify specific reform initiatives, and then will provide assistance to design and implement reform initiatives that have succeeded in other countries. The regional water organizations will also be used to showcase successful models and transfer knowledge and practices to other places committed to reform.

While there have been fewer opportunities to work on sanitation services to date, the public health benefits and the related impacts on economic productivity from access to proper sanitation warrants greater attention. The SUWASA project will help reforming utilities expand sanitation services to cities and towns (5,000 to 300,000 residents) in addition to improving access to water. A variety of approaches to improving sanitation that are cheaper than large scale wastewater treatment systems can be implemented, including sanitary drainage, improved latrines and community toilets.

Utility governance and reform efforts will build on experiences developed through USAID's EcoAsia and Blue Revolution programs. The program will include reform activities which demonstrate solutions to key water and sanitation issues and a regional learning network to share lessons learned. It will be designed to build synergies with the

African Growth and Competitiveness Initiative by helping develop fundable projects with significant economic benefits. The regional focus will be addressed through developing sub-Saharan utility leadership forums and providing opportunities for technical twinning partnerships or internships to transfer knowledge and good practices from one utility to another.

While USAID has supported water and sanitation utility reform efforts in other regions, there has been relatively little to no support for this type of work in sub-Saharan Africa. Few Missions have technical staff equipped to address utility reform issues. More importantly, as Missions address water and sanitation reform issues (or change the mix of activities they implement) it will be important for Missions to know what are the best approaches and lessons learned. Due to the limited technical knowledge or experience of field staff, this program will be managed by USAID/Washington. The Task Order will be managed by the Economic Growth, Agriculture & Trade Bureau's Infrastructure and Engineering Office (EGAT/I&E). Country Task Managers from USAID Missions will provide monitoring and evaluation oversight.

The task order is regional and will support at least fifteen reform activities in sub-Saharan Africa in at least six countries. Priority countries include Ethiopia, Democratic Republic of Congo, Ghana, Kenya, Mozambique, Nigeria, Sudan, Tanzania and Zambia. Somalia will also be considered if stability is restored.

ACTIVITY DESCRIPTION:

The SUWASA project will identify and transfer good practice in water utility reform and governance within sub-Saharan Africa in order to improve and expand the delivery of water and sanitation services. Working through local partners and networks, the SUWASA project will support reform initiatives in at least five of the priority countries. SUWASA will provide assistance directly to at least fifteen utilities. Additional reform initiatives may be supported if additional funds become available. The results of these reform initiatives will be documented and shared with national governments, local governments, and other utilities through existing regional associations. At the end of the three years, SUWASA will have developed a range of models that can be adapted and implemented in places committed to reform.

As a specific priority, SUWASA will demonstrate how utility reform and improvements in governance and management can create the right framework for accessing innovative financing for new investments in infrastructure. The SUWASA project will assist with the development of water revolving funds in countries that have a credible plan for establishing such as fund in order to demonstrate the viability of market-based financing in sub-Saharan Africa.

Task 1: Training/Socialization

The Contractor will organize three introductory regional training sessions in different regions of Africa during the initial year of the Task Order to introduce and promote the

SUWASA program concept and the key concepts advanced by the program. The purpose of these training sessions is not only to raise general awareness and understanding of key innovations in water and sanitation utility governance and reform including Environmental Impact Assessments, but to identify partners for the reform activities to be supported during the implementation phase. The regional training sessions will include representatives from the utility sector, central or local government, USAID, other donors, and associations of water utilities. The training session will (1) introduce potential partners to the types of reforms and approaches that are being successfully applied in sub-Saharan Africa (see illustrative list below); (2) explain the objective and general approach of the SUWASA program; and (3) identify initial partners.

The Contractor will work with USAID to identify and invite participants. Attendees will include senior managers from reforming utilities in the priority countries, representatives from associations such as the African Water Utility Operators Partnership (AWUOP), regulators, and central and/or local government officials. As establishing strategic partnerships will be important to the success of the program, invitees should also include USAID mission staff, donors working in the water sector, and other potential partners.

It is expected that up to three regional events will be necessary to facilitate maximum participation. USAID will provide final approval for the location and timing of each event. The Contractor will work closely with the bilateral USAID mission, as appropriate, on issues related to the implementation of the events.

Examples of potential reform initiatives include:

- Mozambique: Water utility corporate governance reform and regulation: The Millennium Challenge Corporation (MCC) will be investing in smaller utilities with weak corporate governance and management. In return, the Mozambique Water Regulation Agency (CRA), a leading water regulatory agency in sub-Saharan Africa, has asked for assistance from USAID to address reforms in corporate governance of water utilities to complement the MCC program.
- Nigeria: Introduction of pro-poor service delivery models in Lagos; support for a lease contract in Plateau State or another state that commits to reform.
- Zambia: Working with individual utilities that are introducing reforms driven by the well-established nationwide water utility regulatory framework.
- The World Bank has also identified Angola, Ethiopia, and Madagascar as places where commitment to utility and/or regulation reform is strong and where a USG investment could make a significant contribution. Output-based Aid (OBA) activities expanding service to the poor in Kampala.
- Uganda: National Water & Sanitation Corporation (NWSC) has been successful in turning around the national utility and now serves as a model for other countries. NWSC is already providing technical assistance to utilities in Zambia and elsewhere. The SUWASA activity may provide assistance in establishing a water investment revolving fund to lend to the country's private water operators.

Task 2: Reform Work Plans

In addition to providing direct technical assistance and training through short and long-term advisors, the SUWASA Contractor will facilitate technical twinning partnerships and “internships” for technical staff as well as policy-makers as a way to transfer

Based on the outcomes of the training sessions, the Contractor will refine the list of potential partners for participation in SUWASA along with a brief description of opportunities. The list will be submitted to USAID for approval along with the criteria utilized to prioritize the potential partners. USAID will have final approval of the short-list of partners to be engaged in the reform activities. The USAID Cognizant Technical Officer (CTO) will take the lead in obtaining USAID Mission approval for the activities at the country level.

For each reform activity, the Contractor will negotiate a Reform Work Plan (RWP) which details the commitments of all parties over the period of the reform support activities. Each of the RWPs should cover a period of no more than twenty-four months and will clearly delineate the assistance to be provided under SUWASA, including training and consulting services and any grants for capital expenditures or commodities.

The responsibilities and commitment of the participating water utility, water regulator, national or local government will also be laid out in the Reform Work Plan, including a signature block for the participant to indicate their willingness to participate in the ways outlined in the RWP. Therefore in addition identifying potential USAID support, the RWP should clearly state the commitments of the reforming partner. In particular, the RWP shall state the staff resources available to implement the reform activity, commitment to continuing and expanding the activities, other budget resources contributing to the successful implementation of the activity.

The Contractor will work closely with the relevant bilateral USAID Mission to keep them informed of the RWP development and to ensure that activities are complementary to any bilateral programs on water and sanitation. Bilateral Missions will also be asked to approve the RWPs for activities in their respective countries.

Task 3: Technical Assistance for Reform Activities

Based on the individual Reform Work Plan for each reform activity, SUWASA will provide technical assistance and support to carry out specific reforms that will lead to improvements in management and in-service delivery. The time frame for the reform activities may vary but will be approximately twenty four months of assistance. Reform activities might include the introduction of improved corporate governance procedures and mechanisms such as new board composition, bonus schemes for management and staff, environmental assessments, and corporate bylaws that require commercialized operation, support for corporatization and design of operating contracts, design of staff incentive schemes, and development of services for poor customers that are commercially viable. At the sector level, the development of a non-leveraged water revolving fund is an example of an innovation in finance.

In addition to providing direct technical assistance and training through short and long-term advisors, the SUWASA Contractor will facilitate technical twinning partnerships and “internships” for technical staff as well as policy-makers as a way to transfer

knowledge and best practice. There are examples of well-run utilities in the region and these institutions should serve as resources to others. For example, staff from utilities in Democratic Republic of Congo and Kenya might carry out internships with utilities in Uganda or South Africa. Peer-to-peer learning opportunities that include hands-on job training experiences and using practitioners to provide technical assistance can be a powerful tool. This also builds local capacity to provide on-going technical support beyond the life of the activity. The Contractor will work with AfWA, AWUOP and other regional associations to implement these activities as this kind of best practice transfer program could be developed in to a viable member service thereby increasing the likelihood of sustaining the results of the SUWASA activity.

Task 4: Sub-Grants Program for Demonstration Projects and Slum/Peri-Urban Services Expansion

Certain reforming partners may receive grants of up to \$250,000 during Phase II to support the reform activities through demonstration projects and expansion of service connections in slum and peri-urban areas. Therefore, on a limited basis, the Reform Work Plans may incorporate this support for capital expenditures to demonstrate the viability of expanding services to the poor, or to support small capital investment requirements associated with reforms. Environmental Assessments must be completed before committing to support of such activities in Phase II of the program. Examples might include establishing community standpipes for slum communities in combination with community education and awareness programs to improve hygiene practices and to establish a Water User Group to maintain the community resources and to engage with the utility. These capital grants may also be provided for specific reform-related expenditures, such as purchase of new billing and collection systems, bulk meters, and metering systems that are being tested on a trial basis.

The SUWASA Activity will be responsible for managing a sub-grant component to support the reform activities through demonstration projects and expansion of service connections in slum and peri-urban areas. On a limited basis, pilot activities shall incorporate limited support (up to \$250,000) for capital expenditures to demonstrate the viability of expanding services to the poor, or to support small capital investment requirements associated with reforms. Examples might include establishing community standpipes for slum communities in combination with community education and awareness programs to improve hygiene practices and to establish a Water User Group to maintain the community resources and to engage with the utility. Capital grants can also be provided for specific reform-related expenditures, such as purchase of new billing and collection systems, bulk meters, and metering systems that are being tested on a trial basis. Environmental Assessments must be completed before committing to support of capital expenditure projects

The Contractor shall develop uniform criteria for reviewing and awarding grants including Environmental Impact Assessments. The Contractor will consult with USAID to approve and finalize the criteria for grants prior to discussing this option with reform partners and development of the Reform Work Plans.

Task 5: Provision of Commodities to Support Implementation of Reforms

The Contractor will procure commodities that will be used to implement reforms in specific utilities. The commodities will be provided under a grant agreement with a local, regional or national government agency responsible for water and sanitation services. Types of commodities will include meters, billing and collection systems and Information Technologies, leak detection equipment, and materials for establishing sectorized and zonal management systems. The Contractor will ensure that the commodities provided by the project are specifically related to implementation of reform activities, and that they are actually used for these purposes.

Task 6: Showcase Results

Throughout the activity, the SUWASA Contractor will carefully monitor and document implementation of the reform activities and the final results. At the conclusion of the reform activities, the Contractor will organize a regional event for water utility operators, national government officials, etc. to give successful reformers an opportunity to showcase their challenges and successes. The showcase event should be coordinated with one of the existing regional associations. The purpose of the final showcase event should not be limited to sharing best practice but should focus on the transfer of that knowledge and good practices to other countries and utilities. The closing event should also allocate time for developing an action plan of next steps for local partners to implement with their own resources to continue the work initiated under the program.

Potential Adverse Effects & Mitigation Measures

Tasks 1-3 and 5 to be implemented under the SUWASA project revolve around providing education, technical assistance, and training programs to Sub-Saharan utilities which will not have a significant effect on the environment as defined in 22 CFR 216 (c)(2)(i) and (iii). The exception to this is Task 4 “Sub-Grants Program for Demonstration Projects” which may include small scale construction or capital improvement projects. As such, SUWASA does not satisfy the categorical exclusion criteria under 22 CFR 216.2(c).

Potential activities implemented as part of Task 4 and water and sanitation projects in general are intended to improve environmental health conditions for beneficiaries. However, poor design, construction or implementation of activities in this sector may result in environmental failures that eliminate or offset the intended benefits. These failures range from heightened risks to human health, to damage to ecosystems and economic activities, to depletion and degradation of water resources available to neighboring and downstream communities. To ensure that any actions taken under Task 4 do not create an unintended, negative impact to the environment all activities under this Task will follow USAID’s “Environmental Guidelines for Small Scale Activities in Africa” (EGSSAA) and shall incorporate environmentally sound design standards (ESDM) during the planning and design phase of capital improvements.

As it is difficult at the time of writing to predict what projects may be implemented as a result of Task 4, this IEE looks at some of the environmental impacts of activities that *are likely* to occur. The table below outlines these potential activities, the potential adverse effects to the environment, and subsequent mitigation measures. As indicated above, all projects under Task 4 will be implemented and designed in accordance to the EGSSAA guidelines; an Environmental Assessment must be completed prior to proceeding with any capital improvements project. In the event that an activity is proposed that is not listed below, those guidelines will serve as a reference for the appropriate mitigation measures for that project.

As the potential projects to be undertaken under Task 4 are primarily related to the extension or enhancement of an existing utility network the potential impacts will be generally localized to the area of where the work is being completed. The activities under Task 4 are not intended for large-scale water resource development (i.e. dams, diversions, etc) nor the large scale development of new water sources (either surface or ground). Further, grant funds awarded under Task 4 may support projects that have no environmental impact such as community education or small scale maintenance of existing infrastructure.

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation measures <i>Note: Measures apply to the project phase specified: planning and design (P&D), construction (C), or operation and maintenance (O&M).</i>
General		
Site selection (P&D)	Damage sensitive ecosystems or endangered species (P&D)	Survey for, and avoid, wetlands, estuaries or other ecologically sensitive sites in the project area. Identify nearby areas that contain endangered species and get professional assessment of species' sensitivity to construction at site (P&D)
Construction of buildings and structures (C)	Damage sensitive ecosystems or endangered species (C) Cause erosion and sedimentation (C)	Follow guideline on Construction in EGSSAA (P&D) (C) Train and monitor workers on best practices in construction of buildings and structures (P&D) (C) Gather data on soil type, slope and topography to determine the potential for significant erosion (P&D) Use silt screens, straw bales or similar erosion control measures (C) Avoid damaging vegetation (C) Revegetate areas damaged during construction. Do not remove erosion control measures until revegetation is complete (C) Use proper bedding materials for pipes (P&D) (C)
Soakways and drains	Cause erosion (O&M) Alter the natural flow of rainwater runoff (O&M) Create pools of stagnant water (O&M)	Use riprap (cobbled stone), gravel or concrete as needed to prevent erosion of drainage structures (P&D) (C) Monitor and keep drains and soakways clear (O&M)
Water Supply Improvements		
Hand-dug wells, seasonal ponds, improved springs, ground-level catchment and similar structures	Contaminate water with human pathogens (O&M)	Include focus on proper use and maintenance of the improvement as part of behavior change and education program (P&D) Construct spigot or similar system that prevents people from touching impounded water with their hands or mouths (P&D) (C)
	Contaminate water with animal manure (O&M)	Use fencing or equivalent that will keep live stock from grazing uphill or up gradient of the water supply improvement (P&D) (C) Do not allow animals to drink directly from the water source (O&M)
	Create pools of stagnant water (O&M) Exhaust water supply (not applicable to improved springs or hand-dug wells) (O&M)	Monitor drains and soakways and keep them clear of debris (see entry on soakways and drains above for more detail) (O&M) Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures (O&M)

Activity/ Technology	Potential Impacts <i>The activity or technology may . . .</i>	Mitigation measures <i>Note: Measures apply to the project phase specified: planning and design (P&D), construction (C), or operation and maintenance (O&M).</i>
		<p>Put in place a system for regulating use, such as a local warden or appropriate pricing (P&D)</p> <p>Give the community training in operating the improvement (P&D) (O&M)</p> <p>Monitor water levels in wells or impoundment structures to detect overdrawn (O&M)</p>
Wells	<p>Provide water contaminated with nutrients and bacteria from animal waste (O&M)</p> <p>Create pools of stagnant water (O&M)</p> <p>Change groundwater flow (O&M)</p> <p>Create saltwater intrusions (O&M)</p> <p>Deplete aquifer (groundwater) (O&M)</p> <p>Cause land subsidence (impact from many wells) (O&M)</p>	<p>Don't let animals graze or be watered up-gradient from wellhead (P&D) (O&M)</p> <p>Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures (O&M)</p> <p>On islands and coastal areas, keep withdrawals within safe yield limits to avoid overdrawn, possible salt water intrusion and contamination of the well (P&D)</p> <p>Test for fecal contamination and arsenic before putting new wells in to service (P&D)</p> <p>Put in place a system for regulating use, such as a local warden or appropriate pricing (P&D)</p> <p>Include a focus on proper use and maintenance of the improvement as part of the behavior change and education program (O&M)</p> <p>Monitor water levels (O&M)</p>
Standpipes	Create pools of stagnant water (O&M) (This problem can be more severe when water table is high, clay soils are present, or population/tap density is high)	<p>Ensure that spilled water and rainwater drain to a soakway or equivalent structure and do not accumulate and create stagnant standing water (C)</p> <p>Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures</p>
Treatment systems		
Pit latrine	<p>Increase transmission of vector-borne diseases (O)</p> <p>Contaminate groundwater supply with pathogens (O)</p> <p>Contaminate water supplies, damage water quality and/or</p>	<p>Devote adequate attention to identifying and addressing social barriers to using latrine (P&D)</p> <p>Use the ventilated improved pit latrine design that traps insect vectors (P&D)</p> <p>Evaluate depth to water table, including seasonal fluctuations and groundwater hydrology. The size and composition of the unsaturated zone determine the residence time of effluent from the latrine, which is the key factor in removal and elimination of pathogens. Pit latrines should not be installed where the water table is shallow or where the composition of the overlying deposits make groundwater or an aquifer vulnerable to contamination (P&D)</p> <p>Ensure that a reliable system for safely emptying latrines and transporting the</p>

Activity/ Technology	Potential Impacts <i>The activity or technology may . . .</i>	Mitigation measures <i>Note: Measures apply to the project phase specified: planning and design (P&D), construction (C), or operation and maintenance (O&M).</i>
	<p>transmit disease at other locations if waste is not properly handled and treated during or after servicing (O)</p> <p>Cause injury to people or animals</p>	<p>collected material off-site for treatment is used. This should include use of a small pit-emptying machine such as the vacutug that relies on an engine-driven vacuum pump. The vacutug was tested for UNCHS in low-income areas of Nairobi, Kenya, and was found to give workers much greater protection from disease than conventional methods. See Wegelin-Schuringa, <i>Small Pit-Emptying Machine: An Appropriate Solution in Nairobi Slum</i>, for more details (O&M)</p> <p>Ensure that collected material is adequately treated and not directly applied to fields or otherwise disposed of improperly (O&M)</p> <p>Properly decommission pit latrines. Do not leave pits open. Fill in unused capacity with rocks or soil.</p>
Septic tanks	<p>Contaminate groundwater supply with pathogens (O&M)</p> <p>Contaminate surface water supplies with nutrients, biological oxygen demand (BOD), suspended solids (SS) and pathogens. (Septic tank effluent generally contains relatively high concentrations of pathogens, BOD, and SS) (O&M)</p> <p>Contaminate water supplies, damage water quality and/or transmit disease at other locations if waste is not properly handled and treated during or after servicing (O&M)</p>	<p>Evaluate depth to the water table, including seasonal fluctuations and groundwater hydrology. If water table is too high, line the tank with clay, plastic sheeting or some other impermeable material to prevent leakage (P&D) (C)</p> <p>Avoid direct discharge of effluent to waterways if possible. Direct discharge to waterways with sufficient volume and flow to assimilate the waste may be acceptable. It is better to add a secondary treatment, such as passing effluent through an anaerobic filter, followed by discharge to an absorption field, or better yet, a constructed wetland (P&D)</p> <p>Ensure that a reliable system for safely removing sludge and transporting the collected material off-site for treatment is available. This should include use of a mechanized (probably vacuum-based) removal system (P&D) (O&M)</p> <p>Ensure that collected sludge is adequately treated and not directly applied to fields or otherwise improperly disposed of (See Sludge management below) (O&M)</p>
Upflow anaerobic filters	<p>Damage ecosystems and degrade surface water quality. Sludge has high concentrations of nutrients, BOD, and solids (O&M)</p> <p>Cause disease transmission to field workers and consumers of agricultural products (Sludge may still contain pathogens) (O&M)</p>	<p>Treat sludge before secondary use (see Sludge management below). Do not allow disposal in or near water bodies (O&M)</p> <p>Provide workers servicing, transporting, and otherwise exposed to sludge with appropriate protective clothing including, at a minimum, rubber gloves. Train workers to wash hands and faces frequently with soap and warm water and make both available. (See Wastewater and sludge use in agriculture and aquaculture below) (O&M)</p>
Settled and simplified sewers	<p>Damage ecosystems and degrade surface water quality (O&M)</p> <p>Transmit diseases to field workers and consumers of agricultural products (O&M)</p>	<p>Ensure that collected sewage will be treated, e.g., in a wastewater stabilization pond, and not simply discharged to a river or stream or used directly in agriculture or aquaculture. This is especially important for simplified sewerage, since there is no interceptor tank (P&D) (O&M)</p>

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation measures <i>Note: Measures apply to the project phase specified: planning and design (P&D), construction (C), or operation and maintenance (O&M).</i>
Biogas reactors	Damage ecosystems and degrade surface water quality (O&M) Transmit diseases to field workers and consumers of agricultural products (O&M)	Do not allow disposal of digested slurry in or near water bodies (O&M) Follow WHO or other national or international guidelines for use of sludge in wastewater in agriculture and aquaculture (see Sludge and wastewater reuse below) (P&D) (O&M)
Wastewater stabilization ponds (anaerobic, facultative, aerobic)	Damage ecosystems and degrade surface water quality (O&M) Transmit diseases to field workers and consumers of agricultural products (O&M)	Avoid discharging single (facultative) pond systems directly into receiving waters. If this is unavoidable, construct hydrography-controlled release lagoons that discharge effluent only when stream conditions are adequate. Install secondary treatment such as a constructed wetland, if possible (P&D) (C) (O&M) Use two-, three- or five-pond systems if possible (anaerobic, facultative, (maturation)) (P&D) Allow only restricted uses for agriculture and aquaculture of effluent from all but five-pond systems (O&M)
Reed bed filter	Contaminate groundwater or surface water (O&M)	Evaluate depth to the water table, including seasonal fluctuations and groundwater hydrology. If water table is too high, line tank with clay, plastic sheeting or some other impermeable material to prevent leakage (P&D) (C)
Subsurface wetland	(See reed bed filter above)	
Free water surface wetland Floating aquatic macrophytes	Provide breeding ground for disease vectors (O&M) Introduce invasive non-native species (O&M)	Use plant and animal species that are native to the region. Avoid introducing water hyacinth, water milfoil, or salvinia, which have proven extremely invasive outside of their natural range (P&D) If using water hyacinth, maintain dissolved oxygen at 1.0 mg/L, frequently harvest and thin plants and/or add mosquitofish (<i>Gambusia affinis</i>) to the wetland or use other plant species such as duckweed, water lettuce (<i>Pistia stratiotes</i>), water milfoil, or salvinia (<i>Salvinia spp.</i>) (O&M)
Slow-rate overland flow	Contaminate groundwater or surface water (O&M)	Use where growing season is year round. Requires vegetation (P&D) (O&M) Use only where soil textures are sandy loam to clay loam (P&D) (O&M) Use where groundwater is >3 ft. below surface (P&D) (O&M)
Slow-rate subsurface flow	Contaminate groundwater or surface water (O&M)	Use only where soil textures are sand to clayey loam (P&D) Use only where groundwater is >3 ft. below surface (P&D)
Rapid infiltration	Contaminate groundwater or surface water (O&M)	Use only where soil textures are sandy to loam (P&D) Use only where groundwater is >3 ft. below surface (P&D)

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation measures <i>Note: Measures apply to the project phase specified: planning and design (P&D), construction (C), or operation and maintenance (O&M).</i>
Sludge management	Damage ecosystems and degrade surface water quality (O&M) Cause disease in handlers and processors (O&M)	If possible, choose treatment technologies that do not generate sludge, such as wastewater stabilization ponds (P&D) Compost sludge, then use as soil amendment for agriculture (O&M) Provide workers with appropriate protective clothing, including rubber gloves, boots, long-sleeved shirts and pants. Train workers to wash hands and faces frequently with soap and warm water and make both available (O&M)
Wastewater use in agriculture and aquaculture	Cause disease in field workers and consumers of agricultural products (O&M)	WHO guidelines recommend (1) treat to reduce pathogen concentrations, (2) restrict use to crops that will be cooked, (3) use application methods that reduce contact with edible crops, and (4) minimize the exposure of workers, crop handlers, field workers and consumers to waste (P&D) (O&M) Wastewater used in aquaculture should have <10 ³ fecal coliforms per 100 ml to minimize risk to public health. (See <i>Guidelines for the safe use of wastewater and excreta in agriculture and aquaculture: Measures for Public Health Protection</i> , 1989, WHO, Geneva (P&D) (O&M) http://www.who.int/environmental_information/information_resources/documents/wastreus.pdf

RECOMMENDED ENVIRONMENTAL ACTIONS:

Negative Determination with Conditions: Activities in support of the Sustainable Water and Sanitation in Africa involve education, outreach, technical assistance, training, workshops, meetings, and document transfers, and development planning pursuant to 22 CFR 216.2 (c)(2):

- (i) Education, technical assistance and training (216.2(c)(2)(i));
- (iii) Analyses, studies, and workshops (216.2(c)(2)(iii));
- (v) Document and information transfer (216.2(c)(2)(v)); and
- (xiv) Activities that will develop the capability of recipient countries to engage in development planning.

The activities envisioned under this program primarily involve capacity building, planning and training to improve and strengthen existing laws, legal frameworks, policies, regulations, and develop guidelines for successful utility reform. Given the nature of the overall activities – utility governance reform, technical assistance, training, and knowledge sharing - the large majority of activities under the SUWASA IQC are not anticipated to have environmental impacts.

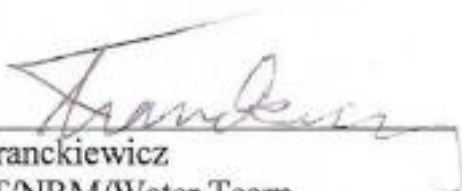
While the large majority of activities under SUWASA are not anticipated to have direct negative environmental impacts, activities under Task 4 may have potential impacts, especially those involving capital construction or rehabilitation projects. Such activities qualify for Negative Determination with Conditions, per 216.3(a)(2)(iii), and will require that monitoring and implementation of mitigation measures be carried out. Potential impacts, indicators, and mitigation measures are detailed in Table 1.

The Cognizant Technical Officer for SUWASA will assume responsibility for actively monitoring the implementation of the activities. In the event that any activity proposed under SUWASA has an adverse or potentially adverse impact on the environment, that activity will require further environmental review and final concurrence by the EGAT Bureau Environment Officer (BEO) per 22 CFR 216.3(a)(2)(iii).

Furthermore, the implementer shall not expend or otherwise utilize funds obligated hereunder for any activity that may have a significant adverse impact on the environment without further environmental review and approval by the BEO.

APPROVAL OF RECOMMENDED ENVIRONMENTAL ACTIONS:

Signed:  8/14/08
Denied: Brian Hirsch Date
AFR Bureau Environment Officer

Signed:  8/14
Denied: Jim Franckiewicz Date
EGAT/NRM/Water Team

Recommended:  8/14/08
Denied: Jim Hester Date
EGAT/NRM Office Director

Approved:  8/14/08
Denied: Joyce Jatko Date
EGAT Bureau Environment Officer

APPENDIX B

USAID ENVIRONMENTAL GUIDELINES TABLE ON POTENTIAL IMPACTS AND MITIGATION MEASURE FOR SMALL-SCALE ACTIVITIES FROM EGSSAA

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation Measures
General <i>Note: Measures apply to the project phase specified: planning and design (P&D), construction (C), or operation and maintenance (O&M).</i>		
Site selection (P&D)	Damage sensitive ecosystems or endangered species (P&D)	Survey for, and avoid, wetlands, estuaries or other ecologically sensitive sites in the project area. Identify nearby areas that contain endangered species and get professional assessment of species' sensitivity to construction at site (P&D)
Construction of buildings and structures (C)	Damage sensitive ecosystems or endangered species (C) Cause erosion and sedimentation (C)	Follow guideline on construction in this manual (P&D) (C) Train and monitor workers on best practices in construction of buildings and structures (P&D) (C) Gather data on soil type, slope and topography to determine the potential for significant erosion (P&D) Use silt screens, straw bales or similar erosion control measures (C) Avoid damaging vegetation (C) Re-vegetate areas damaged during construction. Do not remove erosion control measures until re-vegetation is complete (C) Use proper bedding materials for pipes (P&D) (C)
Soakaways and drains	Cause erosion (O&M) Alter the natural flow of rainwater runoff (O&M) Create pools of stagnant water (O&M)	Use riprap (cobbled stone), gravel or concrete as needed to prevent erosion of drainage structures (P&D) (C) Monitor and keep drains and Soakaways clear (O&M)
Water Supply Improvements		
Hand-dug wells, seasonal ponds, improved springs, ground-level catchment and similar structures	Contaminate water with human pathogens (O&M)	Include focus on proper use and maintenance of the improvement as part of behavior change and education program (P&D) Construct spigot or similar system that prevents people from touching impounded water with their hands or mouths (P&D) (C)
	Contaminate water with animal manure (O&M) Create pools of stagnant water (O&M) Exhaust water supply (not applicable to improved springs or hand-dug wells) (O&M)	Use fencing or equivalent that will keep live stock from grazing uphill or up gradient of the water supply improvement (P&D) (C) Do not allow animals to drink directly from the water source (O&M) Monitor drains and Soakaways and keep them clear of debris (see entry on Soakaways and drains above for more detail) (O&M) Monitor and repair leaks from cracked containment structures, broken pipes, faulty

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation Measures
		<p>valves and similar structures (O&M)</p> <p>Put in place a system for regulating use, such as a local warden or appropriate pricing (P&D)</p> <p>Give the community training in operating the improvement (P&D) (O&M)</p> <p>Monitor water levels in wells or impoundment structures to detect overdrawing (O&M)</p>
Wells	<p>Provide water contaminated with nutrients and bacteria from animal waste (O&M)</p> <p>Create pools of stagnant water (O&M)</p> <p>Change groundwater flow (O&M)</p> <p>Create saltwater intrusions (O&M)</p> <p>Deplete aquifer (groundwater) (O&M)</p> <p>Cause land subsidence (impact from many wells) (O&M)</p>	<p>Don't let animals graze or be watered up-gradient from wellhead (P&D) (O&M)</p> <p>Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures (O&M)</p> <p>On islands and coastal areas, keep withdrawals within safe yield limits to avoid overdrawing, possible salt water intrusion and contamination of the well (P&D)</p> <p>Put in place a system for regulating use, such as a local warden or appropriate pricing (P&D)</p> <p>Include a focus on proper use and maintenance of the improvement as part of the behavior change and education program (O&M)</p> <p>Monitor water levels (O&M)</p>
Standpipes	<p>Create pools of stagnant water (O&M)</p> <p>(This problem can be more severe when water table is high, clay soils are present, or population/tap density is high)</p>	<p>Ensure that spilled water and rainwater drain to a soakaway or equivalent structure and do not accumulate and create stagnant standing water (C)</p> <p>Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures</p>
Treatment Systems		
Pit latrine	<p>Increase transmission of vector-borne diseases (O)</p> <p>Contaminate groundwater supply with pathogens (O)</p> <p>Contaminate water supplies, damage water quality and/or transmit disease at other locations if waste is not properly handled and treated during or after servicing (O)</p> <p>Cause injury to people or animals</p>	<p>Devote adequate attention to identifying and addressing social barriers to using latrine (P&D)</p> <p>Use the ventilated improved pit latrine design that traps insect vectors (P&D)</p> <p>Evaluate depth to water table, including seasonal fluctuations and groundwater hydrology. The size and composition of the unsaturated zone determine the residence time of effluent from the latrine, which is the key factor in removal and elimination of pathogens. Pit latrines should not be installed where the water table is shallow or where the composition of the overlying deposits make groundwater or an aquifer vulnerable to contamination (P&D)</p> <p>Ensure that a reliable system for safely emptying latrines and transporting the collected material off-site for treatment is used. This should include use of a small pit-emptying machine such as the vacutug that relies on an engine-driven vacuum pump. The vacutug was tested for UNCHS in low-income areas of Nairobi, Kenya, and was found to give workers much greater protection from disease than conventional methods. See Wegelin-Schuringa, <i>Small Pit-Emptying Machine: An</i></p>

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation Measures
		<p><i>Appropriate Solution in Nairobi Slum</i>, for more details) (O&M)</p> <p>Ensure that collected material is adequately treated and not directly applied to fields or otherwise disposed of improperly (O&M)</p> <p>Properly decommission pit latrines. Do not leave pits open. Fill in unused capacity with rocks or soil.</p>
Composting toilets	<p>Increase transmission of vector-borne diseases (O)</p> <p>Contaminate groundwater supply with pathogens (O)</p> <p>Cause disease transmission to field workers and consumers of agricultural products (O)</p>	<p>Maintain humidity of composting material above 60% and supplement excreta with generous quantities of carboniferous material (dry leaves, straw, etc.). The pile should then remain aerobic, odor-free and insect-free (O&M)</p> <p>Construct sealed vaults to hold composting material if using fixed-batch systems. If using movable-batch systems check removable containers for leaks before installing (O&M)</p> <p>Test samples from active chamber and mature chamber after fallow period for <i>Ascaris</i> eggs and fecal coliforms (O&M)</p> <p>Allow sufficient residence time in mature chamber. This may vary from 6 months in warm climates to 18 months in cooler climates (O&M)</p> <p>Ensure that the systems will be properly operated and maintained so that the soil amendment taken out after the treatment period is truly sanitized (O&M)</p>
Dry toilets	<p>Increase transmission of vector-borne diseases (O)</p> <p>Cause disease transmission to field workers and consumers of agricultural products (O)</p>	<p>Maintain humidity of composting material below 20% and supplement excreta with alkaline material (ashes or lime). The pile should then remain both odor free and insect free (O&M). Generous applications of ashes will help ensure that pathogens are destroyed. pH is the most important factor for sterilization (O&M)</p> <p>Construct sealed vaults to hold dehydrating and curing material (C)</p> <p>Ensure that the systems will be properly operated and maintained so that the soil amendment taken out after the treatment period is truly sanitized (O&M)</p> <p>Test samples from active chamber and mature chamber after fallow period for <i>Ascaris</i> eggs and fecal coliforms to assess level of sterilization (O&M)</p> <p>Allow sufficient residence time in mature chamber. This may vary from 6 months in warm climates to 18 months in cooler climates (O&M)</p>
Septic tanks	<p>Contaminate groundwater supply with pathogens (O&M)</p> <p>Contaminate surface water supplies with nutrients, biological oxygen demand (BOD), suspended solids (SS) and pathogens. (Septic tank effluent generally contains relatively high concentrations of pathogens, BOD, and</p>	<p>Evaluate depth to the water table, including seasonal fluctuations and groundwater hydrology. If water table is too high, line the tank with clay, plastic sheeting or some other impermeable material to prevent leakage (P&D) (C)</p> <p>Avoid direct discharge of effluent to waterways if possible. Direct discharge to waterways with sufficient volume and flow to assimilate the waste</p>

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation Measures
	<p>SS) (O&M)</p> <p>Contaminate water supplies, damage water quality and/or transmit disease at other locations if waste is not properly handled and treated during or after servicing (O&M)</p>	<p>may be acceptable. It is better to add a secondary treatment, such as passing effluent through an anaerobic filter, followed by discharge to an absorption field, or better yet, a constructed wetland (P&D)</p> <p>Ensure that a reliable system for safely removing sludge and transporting the collected material off-site for treatment is available. This should include use of a mechanized (probably vacuum-based) removal system (P&D) (O&M)</p> <p>Ensure that collected sludge is adequately treated and not directly applied to fields or otherwise improperly disposed of (See Sludge management below) (O&M)</p>
Upflow anaerobic filters	<p>Damage ecosystems and degrade surface water quality. Sludge has high concentrations of nutrients, BOD, and solids (O&M)</p> <p>Cause disease transmission to field workers and consumers of agricultural products (Sludge may still contain pathogens) (O&M)</p>	<p>Treat sludge before secondary use (see Sludge management below). Do not allow disposal in or near water bodies (O&M)</p> <p>Provide workers servicing, transporting, and otherwise exposed to sludge with appropriate protective clothing including, at a minimum, rubber gloves. Train workers to wash hands and faces frequently with soap and warm water and make both available. (See Wastewater and sludge use in agriculture and aquaculture below) (O&M)</p>
Settled and simplified sewers	<p>Damage ecosystems and degrade surface water quality (O&M)</p> <p>Transmit diseases to field workers and consumers of agricultural products (O&M)</p>	<p>Ensure that collected sewage will be treated, e.g., in a wastewater stabilization pond, and not simply discharged to a river or stream or used directly in agriculture or aquaculture. This is especially important for simplified sewerage, since there is no interceptor tank (P&D) (O&M)</p>
Biogas reactors	<p>Damage ecosystems and degrade surface water quality (O&M)</p> <p>Transmit diseases to field workers and consumers of agricultural products (O&M)</p>	<p>Do not allow disposal of digested slurry in or near water bodies (O&M)</p> <p>Follow WHO or other national or international guidelines for use of sludge in wastewater in agriculture and aquaculture (see Sludge and wastewater reuse below) (P&D) (O&M)</p>
Wastewater stabilization ponds (anaerobic, facultative, aerobic)	<p>Damage ecosystems and degrade surface water quality (O&M)</p> <p>Transmit diseases to field workers and consumers of agricultural products (O&M)</p>	<p>Avoid discharging single (facultative) pond systems directly into receiving waters. If this is unavoidable, construct hydrography-controlled release lagoons that discharge effluent only when stream conditions are adequate. Install secondary treatment such as a constructed wetland, if possible (P&D) (C) (O&M)</p> <p>Use two-, three- or five-pond systems if possible (anaerobic, facultative, (maturation)) (P&D)</p> <p>Allow only restricted uses for agriculture and aquaculture of effluent from all but five-pond systems (O&M)</p>
Reed bed filter	<p>Contaminate groundwater or surface water (O&M)</p>	<p>Evaluate depth to the water table, including seasonal fluctuations and groundwater hydrology. If water table is too high, line tank with clay, plastic sheeting or some other impermeable material to prevent leakage (P&D) (C)</p>
Subsurface	<p>(See reed bed filter above)</p>	

Activity/ Technology	Potential Impacts <i>The activity or technology may...</i>	Mitigation Measures
wetland		
Free water surface wetland Floating aquatic macropytes	Provide breeding ground for disease vectors (O&M) Introduce invasive non-native species (O&M)	Use plant and animal species that are native to the region. Avoid introducing water hyacinth, water milfoil, or salvinia, which have proven extremely invasive outside of their natural range (P&D) If using water hyacinth, maintain dissolved oxygen at 1.0 mg/L, frequently harvest and thin plants and/or add mosquito fish (<i>Gambusia affinis</i>) to the wetland or use other plant species such as duckweed, water lettuce (<i>Pistia stratiotes</i>), water milfoil, or salvinia (<i>Salvinia spp.</i>) (O&M)
Slow-rate overland flow	Contaminate groundwater or surface water (O&M)	Use where growing season is year round. Requires vegetation (P&D) (O&M) Use only where soil textures are sandy loam to clay loam (P&D) (O&M) Use where groundwater is >3 ft. below surface (P&D) (O&M)
Slow-rate subsurface flow	Contaminate groundwater or surface water (O&M)	Use only where soil textures are sand to clayey loam (P&D) Use only where groundwater is >3 ft. below surface (P&D)
Rapid infiltration	Contaminate groundwater or surface water (O&M)	Use only where soil textures are sandy to loam (P&D) Use only where groundwater is >3 ft. below surface (P&D)
Sludge management	Damage ecosystems and degrade surface water quality (O&M) Cause disease in handlers and processors (O&M)	If possible, choose treatment technologies that do not generate sludge, such as wastewater stabilization ponds (P&D) Compost sludge, then use as soil amendment for agriculture (O&M) Provide workers with appropriate protective clothing, including rubber gloves, boots, long-sleeved shirts and pants. Train workers to wash hands and faces frequently with soap and warm water and make both available (O&M)
Wastewater use in agriculture and aquaculture	Cause disease in field workers and consumers of agricultural products (O&M)	WHO guidelines recommend (1) treat to reduce pathogen concentrations, (2) restrict use to crops that will be cooked, (3) use application methods that reduce contact with edible crops, and (4) minimize the exposure of workers, crop handlers, field workers and consumers to waste (P&D) (O&M) Wastewater used in aquaculture should have <10 ³ fecal coliforms per 100 ml to minimize risk to public health. (See <i>Guidelines for the safe use of wastewater and excreta in agriculture and aquaculture: Measures for Public Health Protection</i> , 1989, WHO, Geneva (P&D) (O&M) http://www.who.int/environmental_information/Information_resources/documents/wastreus.pdf)



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